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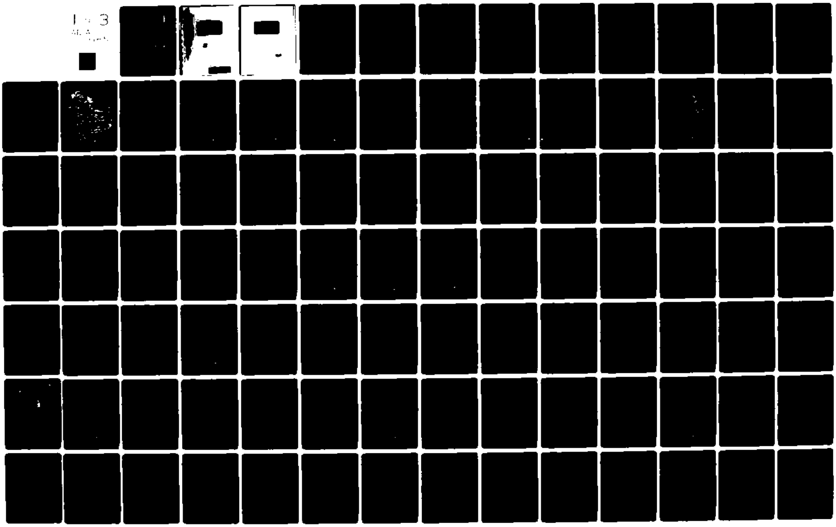

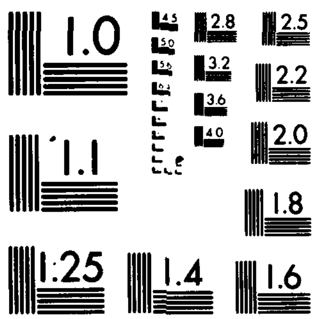

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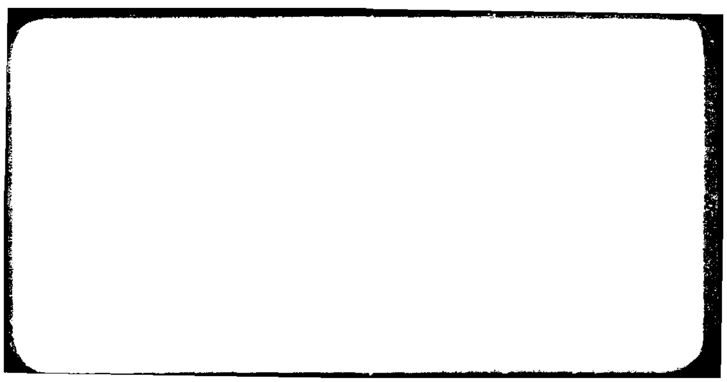

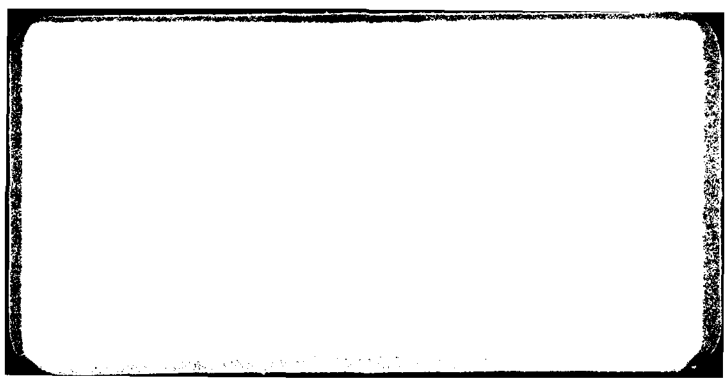

E-TR-48-III-I

FIELD SURVEYS, IOC VALLEYS
CULTURAL RESOURCES SURVEY
DRY LAKE VALLEY, NEVADA

VOLUME III PART I

Prepared for:

U.S. DEPARTMENT OF AIR FORCE
Ballistic Missile Office (BMO)
Norton Air Force Base, California 92409

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20. ABSTRACT (Continue on reverse side if necessary and identify by block number)

Results of the cultural resource survey of Dry Lake Valley, Nevada indicates that there was a much more extensive use and occupation of the area than was indicated by previous surveys. These sites are located along the playa margin near such special resources as chert sources and native grasses.

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FOREWORD

This report was prepared for the Department of the Air Force, Ballistic Missile Office (BMO), in compliance with Contract No. F04704-80-C-0006, Task 4.5. The report, in three volumes, describes and evaluates procedures for shelter layouts and field studies consisting of land and environmental surveys and geotechnical inspections of sites and some road corridors in the IOC valleys.

Volume I presents an overview of the program, evaluates the procedures and summarizes the findings in Dry Lake Valley, Nevada, and Pine and Wah Wah valleys, Utah. Volume II describes in two parts the biological resources of the area. Volume III, describes the cultural resources and is divided into this volume, Part I-Dry Lake Valley, and Part II-Pine and Wah Wah valleys.

Changes to the baseline criteria and requirements made during the field surveys include:

- Deletion of the Remote Surveillance Sites (RSSs) as of 12 March 1981;
- Major rerouting of the Designated Transportation Network (DTN) in northern Wah Wah Valley; and
- Modification of the road pattern from straight-line to direct-connect.

No shelter relocations or reorientations were made as a result of the baseline change from straight-line cluster roads to direct-connect roads. Recent layout studies indicate that shelter sites investigated for the study can be used for the direct connect concept, however, the orientation of some shelters could be improved if new direct connect layouts were performed. It is expected that most or all of the CMF sites will have to be relocated for the direct-connect concept.

Additional studies are planned as part of the IOC program. These include:

- Consultations with Utah and Nevada State Historic Preservation Offices (SHPO) to evaluate significance of sites in the IOC valleys and their potential for inclusion in the National Register of Historic Places;
- determination of project effects on significant cultural resources;
- development of possible cultural resource mitigation measures; and

- Native American consultations.

The results of these additional tasks will be incorporated in revisions of Volume III of this report and in a supplemental report which will be complete during FY 82.

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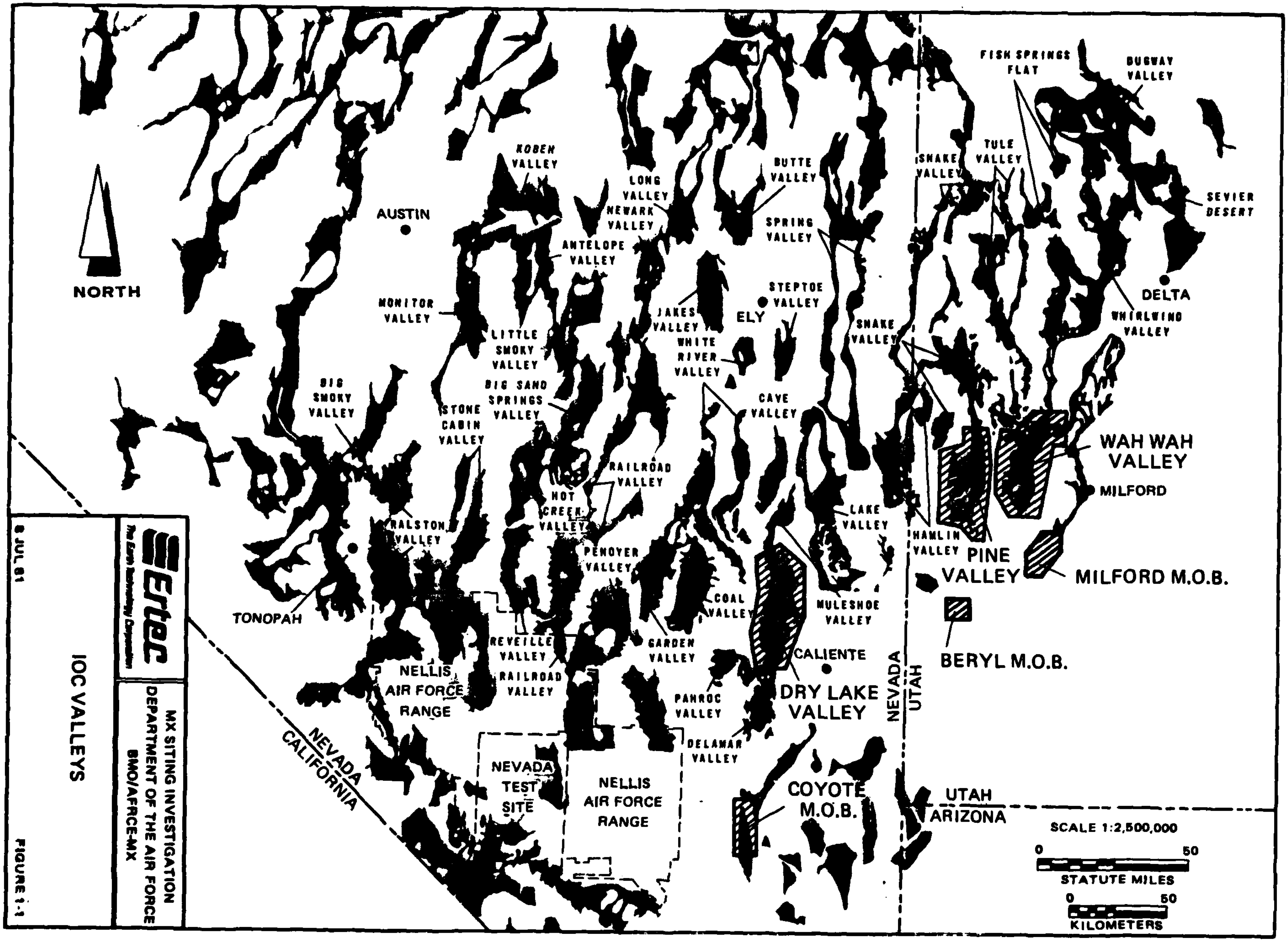
1.0 INTRODUCTION

1.1 BACKGROUND

In April and May of 1980, the AFRCE proposed to initiate field studies in selected Nevada and Utah valleys for the purposes of testing cluster layout procedures and determining potential field problems in actual shelter siting. Dry Lake, Nevada, was selected because it was large enough to support 10 clusters and was relatively close to the proposed Operational Base (OB) site in Coyote Spring Valley. Pine and Wah Wah valleys, Utah, were selected because they were the closest valleys to proposed OB sites near the towns of Beryl and Milford and, together, could support 10 clusters (Figure 1-1).

According to present Air Force plans, there is to be an Initial Operational Capability (IOC) of 10 clusters by mid-1986. There is a high likelihood that shelter construction would start either in Dry Lake Valley, Nevada, or Pine and Wah Wah valleys, Utah, to meet the IOC schedule. For this reason, the present program is referred to as field surveys, IOC valleys.

The intent of the IOC field surveys program was to support the development of the siting methodology and the land withdrawal application being submitted to Congress by the U.S. Air Force. The land withdrawal package must include a legal description of federal lands to be withdrawn for MX. The field program for the IOC valleys was developed after consultations with AFRCE-MX and Utah and Nevada state offices of the Bureau of Land Management (BLM).


NORTH
AUSTIN
TONOPAH
ELY
DELTA
MILFORD
CALIENTE
FISH SPRINGS FLAT
BUGWAY VALLEY
SEVIER DESERT
SNAKE VALLEY
TULE VALLEY
WHIRLWIND VALLEY
KOBEN VALLEY
LONG VALLEY
NEWARK VALLEY
BUTTE VALLEY
SPRING VALLEY
ANTELOPE VALLEY
MONITOR VALLEY
JAKES VALLEY
STEPTOE VALLEY
LITTLE SMOKY VALLEY
WHITE RIVER VALLEY
BIG SMOKY VALLEY
BIG SAND SPRINGS VALLEY
STONE CABIN VALLEY
CAVE VALLEY
WAH WAH VALLEY
RAILROAD VALLEY
HOT CREEK VALLEY
RALSTON VALLEY
LAKE VALLEY
HAMLIN VALLEY
PINE VALLEY
MILFORD M.O.B.
PENOYER VALLEY
COAL VALLEY
MULESHOE VALLEY
REVEILLE VALLEY
GARDEN VALLEY
BERYL M.O.B.
NELLIS AIR FORCE RANGE
DRY LAKE VALLEY
PAHROC VALLEY
DELAMAR VALLEY
NEVADA UTAH
NEVADA CALIFORNIA
NEVADA TEST SITE
COYOTE M.O.B.
UTAH ARIZONA
SCALE 1:2,500,000
0 50 STATUTE MILES
0 50 KILOMETERS
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DEPARTMENT OF THE AIR FORCE
BMO/AFRCE-MX
IOC VALLEYS
8 JUL 81

FIGURE 1-1

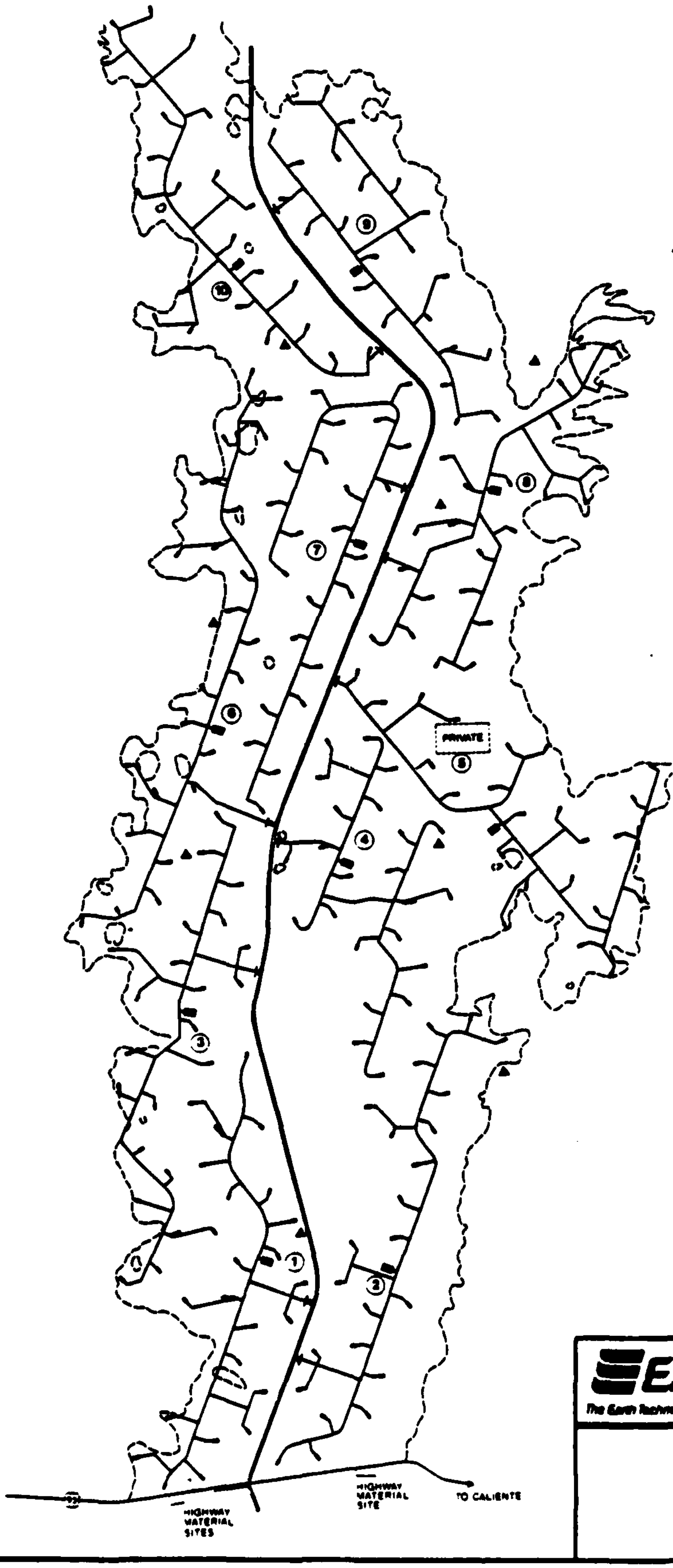
1.2 OBJECTIVES

The primary objectives of the IOC field surveys were to:

- Identify problems associated with siting criteria or layout procedures by actually locating Horizontal Shelter Sites (HSSs), Cluster Maintenance Facilities (CMFs) and Remote Surveillance Sites (RSSs) in the field;
- Assess environmental and geotechnical conditions at the shelter, CMF, and RSS sites and along a few road corridors and determine what changes are needed to minimize impacts;
- Develop a methodology for performing field surveys in the Designated Deployment Area (DDA); and
- Provide legal descriptions of surveyed sites for the land withdrawal application.

The elements of the program are as follows:

- Complete shelter layouts for Dry Lake, Pine, and Wah Wah valleys at a scale of 1:62,500 showing all shelter, CMF, and RSS sites (Figures 1-2, 1-3 and 1-4).
- Submit layouts to BMO/AFRCE for review. Modify the layouts, if needed, in accordance with review comments.
- Transfer the layout to 1:9600 scale topographic maps. Adjust site locations, if necessary, to avoid drainages and other features that can be identified on the drawings at this scale.
- Determine the state plane coordinates and bearings of all structures. In Dry Lake Valley, determine the coordinates of points of intersection of the Designated Transportation Network (DTN) and Cluster 2 roads. Provide the land surveyors with these data.
- Perform field surveys to locate and monument each site and stake the centerline of the DTN and Cluster 2 roads in Dry Lake Valley.
- Perform geotechnical inspection of sites to determine if they are located in suitable area and to evaluate site-specific geotechnical and terrain conditions. Based on evaluations, recommend which sites should be relocated.
- Inventory cultural resources including prehistoric and historical artifacts and sites and determine which resources may be adversely affected by project construction. Based on consultation with Bureau of Land Management archeologists,



KEY

- ① CLUSTER
- ▪ SHELTER SITE
- ■ CLUSTER MAINTENANCE FACILITY (CMF)
- – BARRIER
- ▲ REMOTE SURVEILLANCE SITE (RSS)
- DESIGNATED TRANSPORTATION NETWORK ROAD (DTN)
- — CLUSTER ROAD
- --- SUITABLE AREA BOUNDARY

0 — 6096 M 20,000 FT

SYMBOLS ARE NOT TO SCALE

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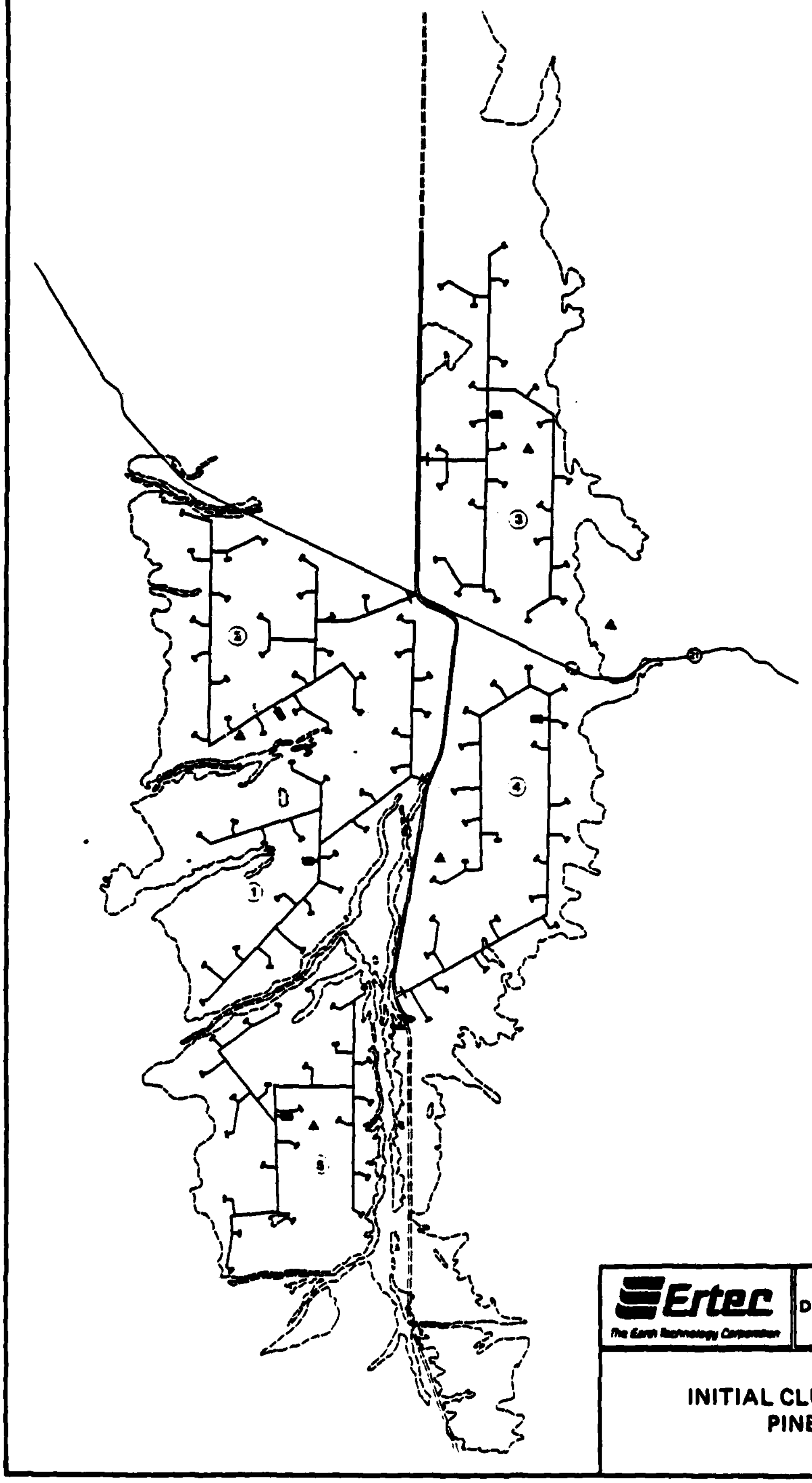
INITIAL CLUSTER LAYOUTS
DRY LAKE VALLEY

FIGURE 1-2



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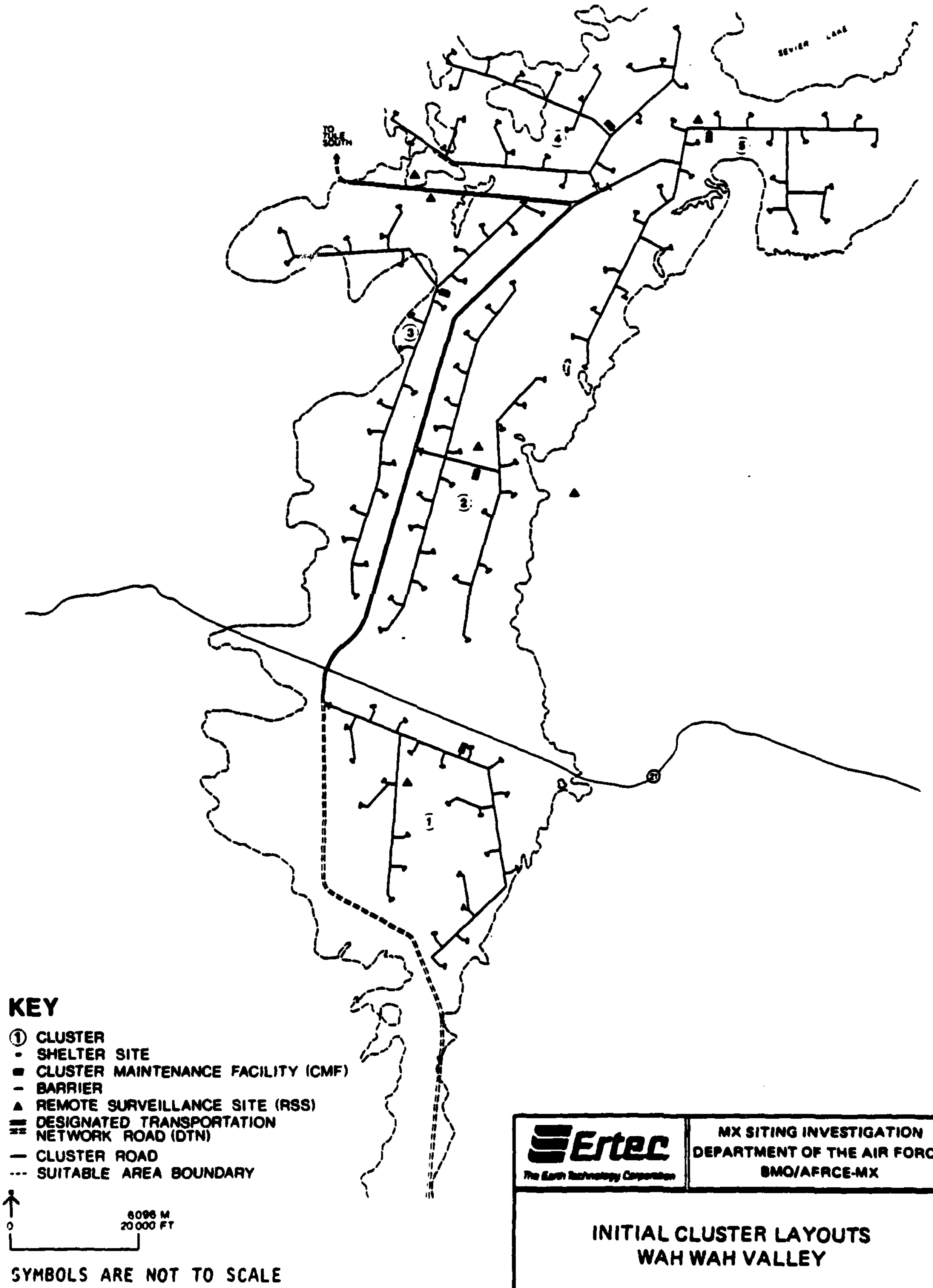
INITIAL CLUSTER LAYOUTS
PINE VALLEY

FIGURE 1-3



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INITIAL CLUSTER LAYOUTS
WAH WAH VALLEY

FIGURE 1-4

make recommendations to mitigate adverse effects on resources eligible for the National Register of Historic Places or considered significant for other reasons.

- Perform biological field surveys to determine the location of sensitive, threatened, and endangered plant and wildlife species that may be adversely affected by project construction. Recommend mitigative measures, when possible, based upon consultation with personnel from state and federal agencies.

- Submit recommendations to BMO/AFRCE for field and office review. After final decisions have been made regarding the number of sites to be relocated, layouts are revised, new coordinates are generated, sites are resurveyed, and monumented, and environmental surveys are completed.

- Prepare legal descriptions of the land at each site that will be withdrawn from public use.

- Prepare an environmental report and general report of the program.

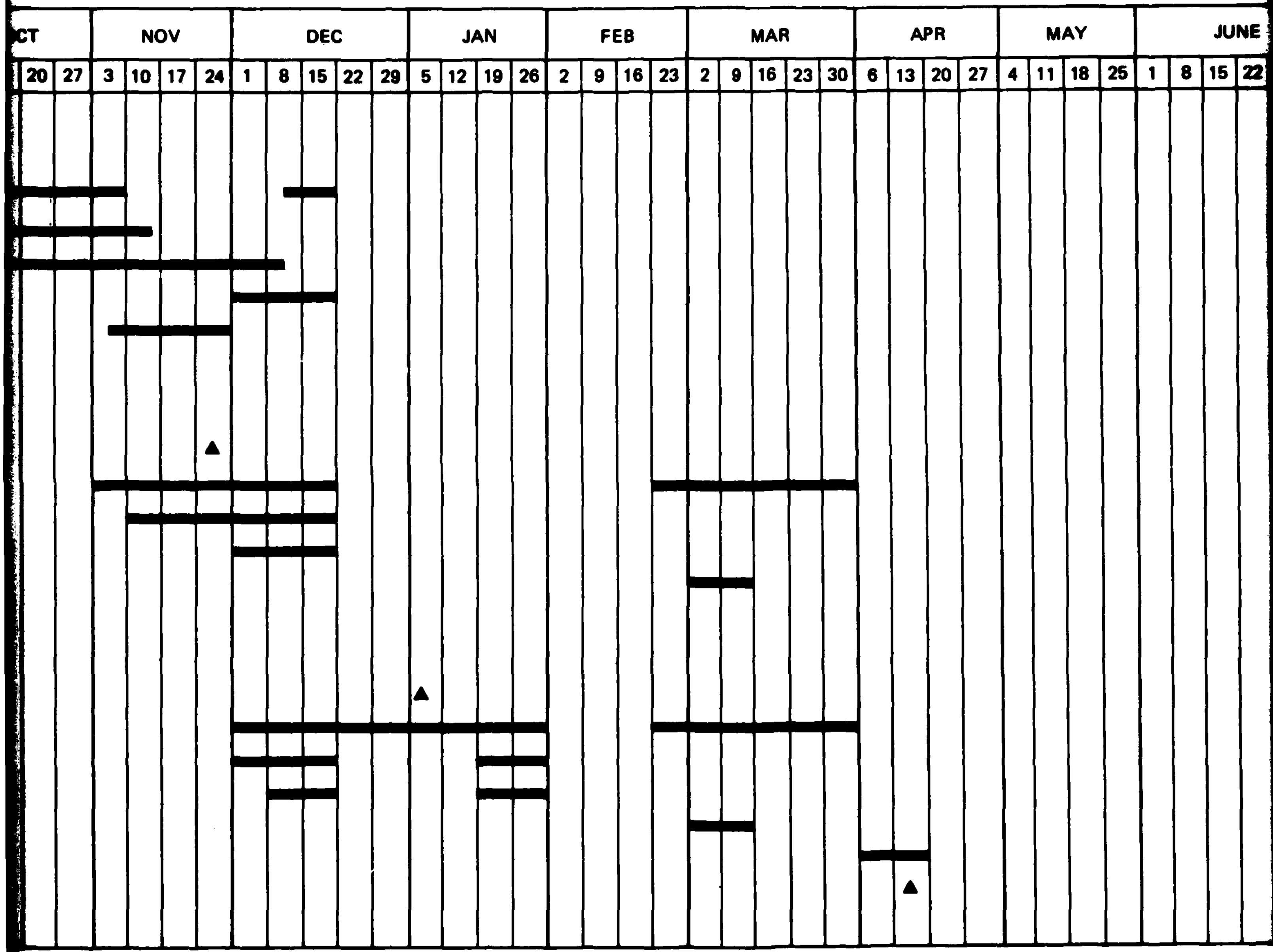
The layouts for Dry Lake, Pine, and Wah Wah valleys, at a scale of 1:9600, were completed 8 September 1980, 25 November 1980, and 8 January 1981, respectively. Locating existing survey controls and establishing a control grid over Dry Lake Valley began on 28 August 1980; surveying and monumenting shelter sites began shortly thereafter. The cultural resources and biological field surveys and geotechnical inspections began 29 September 1980 in Dry Lake Valley and were completed for all valleys on 15 March 1981. An effort was made to complete as much field work as possible by December 1980 knowing there would be delays in the winter months because of weather conditions. A completed schedule is shown in Figure 1-5.

1.3 REPORT ORGANIZATION

This report presents a description of the data and techniques used to derive shelter layouts. Valley specific information and results of the field surveys for the three IOC valleys are

TASK DESCRIPTION	AUG			SEPT				
	11	18	25	8	15	22	29	6
DRY LAKE VALLEY								
LAYOUT COMPLETED (1:9600 SCALE)								
SURVEYING AND MONUMENTING								
ENVIRONMENTAL INSPECTIONS								
GEOTECHNICAL INSPECTIONS								
ENVIRONMENTAL FIELD SURVEYS—RESITINGS								
DETAIL OF CLUSTER 2 (SURVEYING)								
PINE VALLEY								
LAYOUT COMPLETED (1:9600 SCALE)								
SURVEYING AND MONUMENTING								
ENVIRONMENTAL FIELD SURVEYS								
GEOTECHNICAL INSPECTIONS								
ENVIRONMENTAL FIELD SURVEYS—RESITINGS								
WAH WAH VALLEY								
LAYOUT COMPLETED (1:9600 SCALE)								
SURVEYING AND MONUMENTING								
ENVIRONMENTAL FIELD SURVEYS								
GEOTECHNICAL INSPECTIONS								
ENVIRONMENTAL FIELD SURVEYS—RESITINGS								
COMPLETE RESITINGS (CHANGES TO LAYOUT AFTER FIELD SURVEYS)								
DRAFT REPORT TO U.S. AIR FORCE								
FINAL REPORT								

TIME SCHEDULE



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SCHEDULE

NOTE: FIGURE 1-5 SAME AS 1-2 IN VOL. I

2

Y		JUNE					JULY			
18	25	1	8	15	22	29	6	13	20	27
										▲

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SCHEDULE OF FIELD SURVEYS

FIGURE 1-5

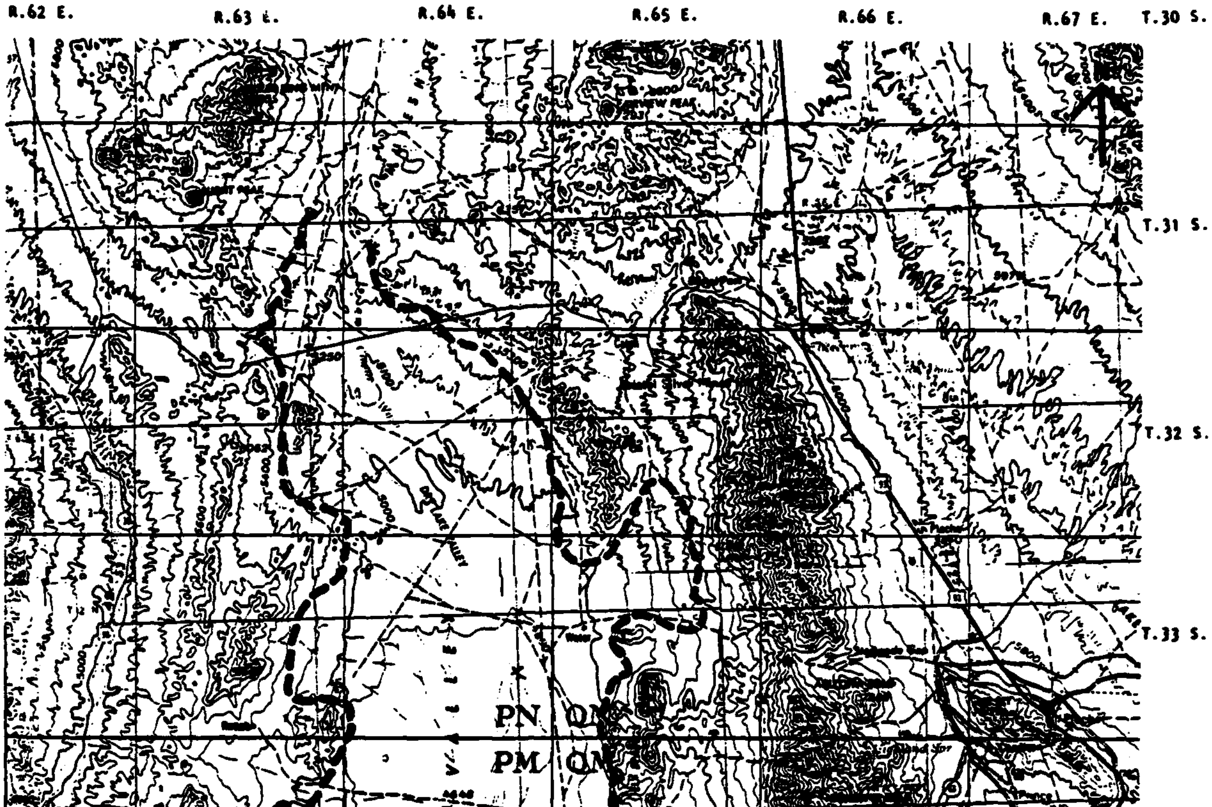
3

summarized. An evaluation of the methods and techniques forms the basis for recommended program and method changes.

The report consists of three volumes. Volumes II and III contain two parts which are bound separately. The contents of each volume are as follows:

Volume I - Program Overview and Methodology;
Volume II, Part I - Biological Resources, Dry Lake Valley, Nevada;
Volume II, Part II - Biological Resources, Pine and Wah Wah valleys, Utah;
Volume III, Part I - Cultural Resources, Dry Lake Valley, Nevada; and
Volume III, Part II - Cultural Resources, Pine and Wah Wah valleys, Utah.

This volume (Volume III, Part I) presents the methodology and results of cultural resources surveys of 10 CMFs, 5 RSSs, 230 HSSs, in Dry Lake Valley, Lincoln County, Nevada (Figure 1-6), conducted between September 1980 and December 1980. Background research methods and results for this study are presented in Section 2.0; field survey methods and results are presented in Section 3.0; the eligibility of sites to National Register of Historic Places is discussed in Section 4.0; and cultural resources mitigation recommendations are given in Section 5.0. Section 6.0 contains a bibliography that includes references cites in the text. Appendices include a list of preparers; agencies, institutions, and individuals consulted; shelter and road summary tables; tables relating shelter sites and archeological sites to environmental variables; and a BLM letter on significance and avoidance and mitigation criteria.



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STUDY AREA

FIGURE 1-6

2.0 BACKGROUND RESEARCH

2.1 METHODS

The following sections describe the methods used to obtain background data on the environment, prehistory, ethnography, and history of Dry Lake Valley. A complete list of agencies, institutions, and individuals consulted is presented in Appendix B.

2.1.1 Environmental Background

Climatic, physiographic, geologic, and hydrologic data on Dry Lake Valley were largely drawn from literature reviews and from Ertec Western, Inc. personnel; the summaries of vegetation and wildlife are taken from the Ertec Northwest, Inc. biological inventory of Dry Lake Valley (Volume II, Part I of this report) and other published sources.

2.1.2 Prehistoric Background

The overview of previous archeological investigations in Dry Lake Valley was largely drawn from published reports of investigations and consultations with archeologists familiar with the project area.

Archival records searches were conducted at the Nevada Archeological Survey, Las Vegas and Reno divisions; the Bureau of Land Management, Las Vegas and Ely district offices; and the Desert Research Institute, Social Sciences Division. Archeological site inventory record forms were also provided by Henningson, Durham, and Richardson Sciences (HDR).

The Nevada State Office of Historic Preservation in Carson City was consulted to check for sites on, eligible for, or nominated to the National Register of Historic Places. The Federal Register (through February 20, 1981) was checked to provide weekly updates.

2.1.3 Ethnographic Background

The ethnographic background data come from published ethnographic and ethnohistorical sources and from Catherine Fowler, Great Basin ethnographer and bibliographer. Personnel from Facilitators, Inc. and HDR provided information on contemporary Native American concerns.

2.1.4 Historical Background

The historical overview of Dry Lake Valley was drawn from numerous academic and government publications and consultations with persons familiar with the project area. Archival records searches were conducted at the BLM district offices in Ely and Las Vegas, the area office in Caliente, and the museum and courthouse in Pioche. In Reno, the institutions consulted included the libraries at the University of Nevada, Washoe County, and the Nevada Historical Society.

Numerous historical maps were also studied, including Township Plats of the Bureau of Land Management and maps from early explorers and government surveyors.

2.2 RESULTS

The results of the background literature and records searches and consulations are presented in the following sections. Section 2.2.1 discusses the present environment and the paleoenvironmental characteristics of the valley. Section 2.2.2 provides an overview of previous arcneological research and known archeological sites in Dry Lake Valley. Section 2.2.3 discusses the ethnographic occupants of Dry Lake Valley and Section 2.2.4 considers the historic period.

2.2.1 General Physiographic and Environmental Description

Dry Lake Valley is located in Lincoln County, Nevada, approximately 20 miles (32 km) west of the town of Caliente (see Figure 1-6 above). Together with Muleshoe Valley to the north, it occupies a surficially closed trough in the Basin and Range physiographic province of the Great Basin (Eakin, 1963; Fenneman, 1931). It is bounded on the east by the Burnt Springs, Ely, Highland, and Bristol ranges. The Chief Range, an extension of the Delamar Mountains, borders the extreme southeastern edge of the valley. The North Pahroc Range bounds the valley on the west.

Dry Lake Valley is separated from Delamar Valley on the south by a low alluvial divide whose saddle altitude is about 4875 feet (1486 m). Muleshoe Valley on the north forms a continuous drainage with Dry Lake Valley via Coyote Wash, which runs through the center of the long axis of the valley, eventually

draining into the Dry Lake Valley Playa. Although Muleshoe Valley is part of the same hydrographic basin (Division of Water Resources, 1971) as Dry Lake Valley, it is topographically distinguished from it by a number of volcanic outcrops (Tschanz and Pampeyan, 1970). In this report, the valleys are considered separate topographic basins.

Elevations range from less than 4600 feet (1402 m) in Dry Lake Playa to above 7000 feet (2134 m) along the western mountain crests and above 8000 feet (2438 m) along the eastern mountain crests. The highest point in the area is Highland Peak with an elevation of 9395 feet (2864 m). The project survey area encompasses the area from the playa edges to the upper alluvial fans, between about 4590 feet (1399 m) and 5900 feet (1798 m) in elevation. These constraints on the project area were imposed by the siting criteria of the proposed snelter sites.

a. Precipitation and Climate: The precipitation and climate of Dry Lake Valley are important because they affected the nature of prehistoric and historic use of the area. The climate of Dry Lake Valley is presently characterized as semi-arid with high summer temperatures and low precipitation. If these climatic conditions existed in the past, prehistoric groups would have been prevented from practicing agriculture in the valley, and settlements would have been centered around semi-permanent

water supplies such as playa margins or near streams in the foothills of the surrounding mountain ranges.

Because water is difficult to obtain at present and was during historic times, agricultural use of the valley has been limited to livestock grazing.

b. Geology and Soils: This discussion of the geologic characteristics of Dry Lake Valley focuses on the geological resources that may have been important to prehistoric groups in the area.

Dry Lake basin is a broad, alluvial plain underlain by older lake deposits and containing younger alluvium in the vicinity of the active playa (Tschanz and Pampeyan, 1970). Younger and intermediate-aged alluvial fans are the predominant surficial geologic units within the valley. Soils range from sandy gravels near the mountain fronts to sandy silts near the center of the valley. Playa deposits cover only a small percentage of the valley surface and interfinger with alluvial deposits below the surface (Fugro National, Inc., 1980).

Lithic materials from the mountain ranges surrounding Dry Lake Valley may have been used by prehistoric peoples for tool manufacture. Rock outcrops on the east side of Dry Lake Valley are predominately dolomites, shales, and limestones (Tschanz and Pampeyan, 1970). A prominant outcrop of instrusive quartz monzonite or diorite is located near Blind Mountain Spring may

contain red chert used as a prehistoric material source. A large pink-to-white quartzite formation also outcrops on the east near Ely Springs Ranch. This, or a similar local outcrop, probably is the raw material source for quartzite artifacts found at archeological sites throughout Dry Lake Valley.

Rocks on the west side of Dry Lake Valley are mapped as predominantly undifferentiated, younger volcanics; however, they also include outcrops of limestones, sandstones, and clastics (Tschanz and Pampeyan, 1970). A prehistoric quarry site near Rattlesnake Spring (Brooks and Ferraro, 1978) may be correlated with formations from this area.

c. Hydrology: The nature and distribution of water resources were extremely important to prehistoric and historic populations in the Great Basin. Although there are few indications of potential water sources for prehistoric populations in Dry Lake Valley, the playa, washes, springs, and catchment basins described below may have been used. During Pleistocene times, Pluvial Lake Bristol covered the central basin of Dry Lake Valley. At maximum stand, it extended to the 4620-foot (1408 m) contour interval, covered a surface area of about 35 square miles (90 km^2) and reached a maximum depth of about 40 feet (12 m) (Mifflin and Wheat, 1979).

The most prominent recent hydrologic feature is the Dry Lake Valley Playa. The playa serves as the central catchment basin for the valley's surface drainage system; however, groundwater

is eventually discharged through the Delamar Valley into the White River and Pahranagat drainages (Eakin, 1963).

The only permanent natural sources of water in Dry Lake Valley are springs located in the foothills of the surrounding mountain ranges. These springs are small with discharges of no more than a few gallons per minute (Eakin, 1963). They were undoubtedly used during prehistoric and historic times.

There are no permanent streams in Dry Lake Valley. The gross physiographic features of the larger stream channels, such as Coyote, Boulder, and Black Canyon washes, indicate that they were probably formed during Pleistocene times (Eakin, 1963). Presently, stream flow occurs for short periods only after heavy rains and from snowmelt runoff. Coyote Wash, the central stream channel flowing into Dry Lake Valley from Muleshoe Valley, contains with fine-grained soils and is grown over with winterfat (<u>Ceratoides lanata</u>), which suggests that erosion from flash floods is not common (Eakin, 1963). Several other washes that drain the ranges on the east and west have steeper gradients, and heavy flows from flooding occasionally carry coarse gravel to the lower part of the alluvial slopes (Eakin, 1963).

Several large earth fissures may also have served as catchment basins in prehistoric times. Three large cracks, more than 2 meters deep and 1 meter wide, occur just west of the Ely Springs Range. These features may be the result of desiccation that occurred as the water level dropped in a Pleistocene-aged lake

in the valley. However, they may also have been caused by spreading or opening due to tectonic (tensional) stresses (Fugro National, Inc., 1980). One of these cracks was filled with water throughout the period of the autumn, 1980 survey.

d. Flora: This general description of the vegetation in Dry Lake Valley is based on an extensive field reconnaisance by Ertec Northwest biologists, a detailed report of which is provided in Volume II, Part I of this report. After initial identification of scientific names in this section, common plant names are used throughout the remainder of the text.

The majority of Dry Lake Valley contains Great Basin vegetation, however, in the extreme southern part of the valley, a transitional southern desert Mojave community has a restricted distribution. The dominant member of this community is the Joshua tree (*Yucca brevifolia*), but it also includes spiny hopsage (*Grayia spinosa*), littleleaf horsebrush (*Tetradymia glabrata*), big sagebrush (*Artemisia tridentata*), little rabbitbrush (*Chrysothamnus viscidiflorus*), and galetta grass (*Hilaria jamesii*). Limited numbers of prickly pear and cholla cactus (*Opuntia* spp.), Mojave yucca (*Yucca baccata*), creosote bush (*Larrea* sp.), and Anderson wolfberry (*Lycium andersonii*) also occur in this community. The greater part of the valley is characterized by cold desert scrub communities. Although the vegetation types are somewhat mixed and unevenly distributed, three major groups of cold desert communities can be

defined: northern desert scrub (sagebrush), salt desert scrub (shadscale), and communities transitional between sagebrush and shadscale.

Sagebrush communities are primarily dominated by sagebrush (*Artemisia tridentata* and *Artemisia nova*) but also include cliffrose (*Cowania mexicana*) and broom snakeweed (*Gutierrezia sarothreae*) as dominant species. Other species include Mormon tea (*Ephedra nevadensis*), winterfat (*Ceratoides lanata*), little rabbitbrush, little leaf horsebrush, and galetta grass.

Limited amounts of cheatgrass (*Bromus tectorum*) and Indian ricegrass (*Oryzopsis hymenoides*) are also found within this community. The distribution of sagebrush communities is limited to the higher fans throughout most of the project area; however, it is found on the basin floor in the extreme northern part of the project area where Dry Lake Valley rises to meet Muleshoe Valley.

Shadscale communities are by far the most widely distributed vegetation. Dominant members of the community include winter-fat, spiny hopsage, greasewood (*Sarcobatus vermiculatus*), and four-wing saltbrush (*Atriplex canescens*). In addition to these, other species include Indian rice grass, galetta grass, Greene's little rabbitbrush (*Chrysothamnus greenii*), sand drop seed (*Sporobolus cryptandrus*), green molly (*Kochia americana*), and shadscale (*Atriplex confertolia*). Budsage (*Artemisia spinescens*) is also a conspicuous member. Shadscale community

types are distributed from the playa edge over most of the alluvial plain; winterfat extends well onto the alluvial fans.

A transitional community between shadscale and sagebrush communitues is unevenly distributed on the lower to upper fans. Species iclude spiny hopsage, Mormon tea, little rabbitbrush, big sagebrush and galetta grass.

It is difficult to ascertain how well the present vegetation distribution reflects the past vegetation and availability of food resources for prehistoric populations. Early explorers' accounts indicate a similar plant distribution, noting in particular the widespread occurrence of winterfat (Merriam, 1893). The present distribution of grasses may be more restricted than in earlier periods. The analysis of Great Basin pristine and grazed communities by Young, et al. (1976) traces the historical depletion of native grasses through overgrazing and their replacement by invasive introduced species. Thus, it is likely that the present low density of native grasses, an important aboriginal food source, may poorly reflect their prehistoric distribution in Dry Lake Valley.

e. Fauna: The native faunal distribution in Dry Lake Valley is restricted in kind and number. Rabbits and hares, important aboriginal food sources, are the most abundant mammals. Blacktail jackrabbits (Lepus californicus) are abundant, but desert cottontails (Sylvilagus spp.) are also present. Other mammals in the valley include kit fox (Vulpes macrotis), badger (Taxidea taxus), bobcat (Lynx rufus), coyote (Canis latrans), kangaroo

rat (Dipodomys spp.), antelope ground squirrel (Ammospermophilus leucurus), gopher (Thomomys spp.), unidentified mice, bighorn sheep (Ovis canadensis), and antelope (Antilocapra americana). Bighorn sheep were once abundant and widely distributed in the vicinity of the project area but are presently rare or entirely absent (McQuivey, 1978) Antelope, although still present, are now less numerous than in earlier times, probably due to the competition from cattle grazing. Mule deer (Odocoileus hemionus) are fairly abundant in the surrounding mountain ranges. Although elk (Cervus canadensis) reportedly occur in the general project area, they are not indigenous to Nevada and were introduced in 1932 (Walstrom, 1973).

Reptiles served as supplementary or starvation foods for some ethnographic groups. Reptiles in Dry Lake Valley include lizards (Sceloporus spp.), gopher snakes (Pituophis spp.), and rattlesnakes (Crotalus sp.).

f. Paleo-Environment: Significantly different environments are postulated for much of the Great Basin during pluvial climatic periods (Mifflin and Wheat, 1979). Such climatic fluctuations frequently cause changes or adjustments in cultural adaptations. Thus, understanding the paleoenvironmental characteristics of a region is important to understanding how prehistoric populations interacted with, and adapted to their environment.

Throughout most of the late Pleistocene the major vegetational zones were probably 1640 feet (500 m) to 4920 feet (1500 m) lower than at present (Madsen, 1976), and sagebrush was probably found in many basins now occupied by shadscale. More vigorous

spring discharge and concentrated groundwater during this early period may have allowed marsh environments to form in Dry Lake Valley. Mehringer's (1967) pollen analysis at Tule Springs in southern Nevada indicates the trend to warmer and drier conditions between 12,000 and 7000 B.P.; however, there are no significant changes in the pollen spectra between 7000 B.P. and the present. The pollen record is not complete for this time interval although climatic and vegetational shifts are indicated (Mehringer, 1967).

No specific information is available on prehistoric environments in the Dry Lake Valley area after the desiccation of the pluvial lakes. There is presently no suggestion that the valley contained shallow lakes in later periods as has been demonstrated for Railroad Valley between 4000 and 1200 B.P. (Davis et al., 1979). Nor are there any indications of recent marsh environments as are reported for Railroad Valley.

Slight climatic shifts from 4000 B.P. to the present, however, may be reflected in the pollen analysis from O'Malley shelter near Caliente (Madsen, 1973). These data suggest that minor vegetational shifts might have occurred in Dry Lake Valley as well. During the last 10,000 years some periods may have had environments more suitable for extensive prehistoric occupation and use. However, the view that Dry Lake Valley may have been as arid as it is now since early post-Pleistocene times seems more in keeping with the kinds and distribution of archeological resources in discussed below.

2.2.2 Prehistoric Overview

This section summarizes archeological data from the eastern Nevada region and from the Dry Lake Valley project area. A tentative regional chronology, based on excavations from stratified rock shelters in the region, is presented first to provide a basis for discussing previous work in Dry Lake Valley. Following this, previous archeological investigations in the immediate vicinity of the project area are reviewed and data on previously recorded sites are presented.

2.2.2.1 Regional Chronology

Although a number of archeological investigations have been carried out in the vicinity of Dry Lake Valley, the full range of prehistoric occupation of the region is not well established. Regional data suggest the following tentative chronology.

Culture	Approximate Time Period
Paleo-Indian	12,000 B.P. - 11,000 B.P.?
Desert Archaic	11,000 B.P. - 500 A.D.
Puebloan	500 A.D. - 1,200 A.D.
Shoshonean	1,000 A.D. - Historic Times

a. Paleo-Indian: The earliest occupation of eastern Nevada is indicated by surface manifestations of fluted points. Fluted points are known to date from a series of Paleo-Indian phases that are represented throughout North America. Although only general provenience for locality is known for many of these points, their widespread distribution and frequent occurrence in

relation to post-Pleistocene lake shores probably indicates the presence of Paleo-Indian or an early lacustrine-adapted tradition in the Great Basin between approximately 11,000 B.P. and 12,000 B.P. (Davis and Shutler, 1969; Tuohy, 1969; Hester, 1973). The specimens collected in the Dry Lake Valley region include two fluted points from "the southernmost lake in Dry Lake Valley" and one found in the Caliente vicinity (Davis and Shutler, 1969). However, these are undated surface finds, and the presence of an early Paleo-Indian occupation of the area has not otherwise been established.

b. Desert Archaic: The term Desert Archaic covers various archeological assemblages found throughout the Great Basin, dating from about 10,000 B.P. These assemblages reflect adaptations to local or regional ecosystems including uplands, valleys, and lakes (Fowler, et al., 1973; Brooks, 1975; Heizer and Napton, 1969). Although an early Archaic occupation has not been firmly established, excavations of stratified rockshelters near the project area indicate a range of prehistoric occupation from approximately 7000 B.P. until historic times.

Early excavations at Etna Cave by Wheeler (1942) identified an Archaic occupation on the basis of Gypsum series projectile points. Although initially thought to represent a Paleo-Indian occupation, the deposits were later cross-dated with materials from O'Malley Shelter, indicating a basal date of 7000 B.P. (Wheeler, 1942; Shutler, 1967). The best data for establishing a regional chronology come from excavati s of stratified

deposits at O'Malley and Conoway shelters and the Scott site (Fowler et al., 1973).

Data at O'Malley shelter indicate that the area was initially occupied by carriers of the Desert Archaic Culture, with a minimum time range between 7100 B.P. and 2970 B.P. Two separate Desert Archaic occupations, an early one between approximately 7100 B.P. and 6720 B.P. and a later one between approximately 4630 B.P. and 2970 B.P., were identified.

The early Desert Archaic occupants hunted bison, bighorn sheep, mule deer, birds, rabbits, ground squirrels, and other rodents. Processing of seeds, roots, and berries is indicated by the presence of groundstone. Other processing activities are indicated by a wide variety of flake stone tools. Diagnostic artifacts include Elko series projectile points, bison bones, and a basin-type metate.

A similar lifeway is indicated for the second period of Desert Archaic occupation; however, evidence of bison hunting is absent. Diagnostic artifacts include some Pinto and Humboldt series and large numbers of Gypsum type projectile points. The earliest evidence at Conoway shelter is of a brief occupation by Desert Archaic populations at approximately 1 A.D. or slightly earlier.

c. <u>Puebloan</u>: Following the Desert Archaic occupation, the Dry Lake Valley area was inhabited by Puebloan groups. The term

Puebloan covers several regional cultural variants exhibiting horticulture, ceramics, and semi-sedentary villages which existed from about A.D. 500 to A.D. 1200. One variant is the Virgin Branch Anasazi culture, which was centered on the Virgin River Basin in southern Nevada and southwestern Utah, but has a large peripheral area of influence. Anasazi pottery was recovered at Etna Cave (Wheeler, 1942), Conoway Shelter (Fowler, et al., 1973), and several other small shelters in the area (Fowler and Sharrock, 1973). Its occurrence in the Dry Lake Valley vicinity probably reflects Anasazi trade or expeditionary forays rather than occupation.

Another Puebloan variant is the Fremont culture, centered in Utah and the extreme eastern part of Nevada. At O'Malley shelter, data indicate that Fremont peoples occupied the area at approximately 1000 A.D. A time span of approximately 950 to 1200-1300 A.D. is postulated. At Conoway shelter, a Puebloan occupation between 900 and 1010 A.D. is indicated by Virgin Branch Anasazi and Fremont ceramics.

The presence of Puebloan and Fremont pottery in the eastern Great Basin has generated a number of reconnaissance projects designed to trace the "pottery boundary," that is the extent of distribution of these ceramics (Harrington, 1926, 1928; Shutler, 1961; Fowler, 1968; Fowler and Sharrock, 1973; Fowler, et al., 1973). One of these horticultural, ceramic-bearing cultures in western Utah and along the Nevada-Utah boundary came to be

known as the Sevier-Fremont, the Western Fremont, or simply the Sevier Culture (Aikens, 1966; Jennings, 1956; Madsen and Lindsay, 1977). The identification, origin, and distribution of the Fremont has generated an enormous amount of research (Aikens, 1970; Jennings, 1978; Marwitt, 1970; Madsen and Lindsay, 1977). In the course of these investigations, several regional variants have been identified including the Uinta, San Rafael, Great Salt Lake, Sevier, and Parowan (Marwitt, 1970).

The Parowan Fremont variant extends into eastern Nevada and includes the Dry Lake Valley area (Marwitt, 1970, Fowler et al. 1973). On the basis of excavations in western Utah and southeastern Nevada, it has been dated between 900 and 1300 A.D. (Fowler, et al., 1973; Marwitt, 1970). Diagnostic attributes in the central Parowan area include circular and quadrilateral pit dwellings and circular surface structures with raised firebasins, Snake Valley pottery, basal-notched and Cottonwood triangular projectile points, distinctively decorated figurines, and a variety of bone artifacts (Marwitt, 1970).

A review of sites in southwestern Utah, considered along with new investigations at the Backhoe Village site, prompted Madsen and Lindsay (1977) to divide the Fremont into two distinct groups: the term Fremont is used to describe agricultural groups in the Colorado drainage and the term Sevier designates those groups in the eastern Great Basin south of the Great Salt Lake. The Sevier culture is distinguished from the agricultural

groups in the Colorado drainage and the term Sevier designates those groups in the eastern Great Basin south of the Great Salt Lake. The Sevier culture is distinguished from the agricultural Fremont by a subsistence economy based on collecting wild plants and animals, primarily from marsh environments, supplemented by corn agriculture (Madsen and Lindsay, 1977).

d. Shoshonean: Near the end of Fremont occupation of the Dry Lake Valley area, a new cultural tradition can be seen which is described as "Shoshonean" in the ethnographic literature. The Shoshonean culture was based on a seasonal hunting-gathering subsistence system that is described in Section 2.2.3. At O'Malley shelter a Shoshonean occupation is included with the Fremont component in later units, and the mixture of ceramics representative of both cultural groups indicates alternating or concomitant occupations. Evidence suggests that Shoshonean groups entered the study area sometime after 1000 A.D. and ultimately replaced Fremont groups. Assemblages from Conoway shelter and the Scott site also contain mixtures of Fremont and Shoshone ceramics in units dating after 1000 A.D. and indicate a Fremont occupation with concurrent or subsequent Shoshonean occupation.

2.2.2.2 Previous Investigations in the Project Area

Previous research in the vicinity of Dry Lake Valley in general has consisted of excavations of stratified rockshelters, transmission line surveys, and scattered geotechnical test and other clearance surveys. Several small excavations in the area,

although limited in depth and scope, support the regional chronology described above. Aside from providing chronological data, however, these investigations have revealed little concerning the prehistoric pattern of occupation and use of the project area.

A small rockshelter, the Mariah site, was excavated by the Nevada Archeological Survey in the northern end of Pahranagat Valley in 1975 (Brooks, et al., 1977). Diagnostic artifacts recovered at the site included Elko, Rose Spring, Cottonwood, and Desert Side-Notched projectile points and small amounts of Sevier pottery. The site is dated at approximately 825 A.D. with a postulated range of occupation to approximately 1300 A.D.

The only excavation in Dry Lake Valley was conducted by Brooks and Ferraro (1978) at Rattlesnake Spring. Although only a small sample of the site area was excavated, tests indicate that the site contains a stratified cultural deposit with a depth of at least 1 meter (Brooks and Ferraro, 1978). The presence of small amounts of Snake Valley gray-ware and Shoshonean pottery indicates a probable occupation of the site at approximately 1100-1200 A.D. In addition, an abundance of flake debitage near a crypto-crystalline outcrop above the spring indicates that the site was used for quarrying and tool manufacturing activities.

Fowler and Sharrock (1973) conducted a large-scale survey in Lincoln County and recorded 141 sites. Although the survey areas included the Dry Lake Valley project area and adjacent

valleys and ranges, only two sites were recorded in Dry Lake Valley, one near Coyote Spring and one near Bristol Wells.

A number of other large-scale surveys have been conducted in the vicinity of the project area, including a systematic survey and sample surface collection in the Pahranagat Valley (Crabtree and Ferraro, 1980); a highway right-of-way survey from Hiko to Sunnyside (Brooks, 1976); and transmission line surveys along the east side of Dry Lake Valley (Fowler, et al., 1978). Clearance surveys for seismic lines, irrigation pipelines, and road and spring developments have been conducted by the BLM and the Nevada Archeological Survey (BLM Ely and Las Vegas Project and Site Record Files).

Several small, spot clearance surveys for hydrologic, material aggregate, and seismic tests for MX geotechnical studies have also been conducted in Dry Lake Valley (Nevada Archeological Survey, Southern Division, Archeological Site Records and Project Files). These surveys have yielded few sites in Dry Lake Valley, most of which consist of either isolated artifacts or small lithic scatters.

Investigations of cultural resources related to the MX construction areas are currently being conducted for the Air Force by several consultants. An overall research design and predictive model for the analysis of potential impacts on cultural resources in the MX construction areas has been prepared (Woodward-Clyde Consultants, 1980). Although draft versions of the

overall research design have recently been distributed, these were not available during the planning phase of the IOC survey in Dry Lake Valley. Copies of site forms recorded in the Dry Lake Valley hydrologic basin (including Muleshoe and Dry Lake Valleys) during the MX regional sampling survey, however, were obtained prior to our survey investigations. The inventory forms indicate that 61 sites were recorded, only 25 of which (including three historic) were located within Dry Lake Valley. Most of the sites in the basin were recorded in Muleshoe Valley, north of the present project area.

2.2.2.3 Previously Recorded Archeological Sites

Forty-five prehistoric sites were previously recorded in Dry Lake Valley; many more were recorded in Muleshoe and Delamar valleys directly to the north and south, respectively. The Dry Lake Valley sites are listed by site number, type, and cultural affiliation in Table 2-1 and are summarized according to site type in Table 2-2.

Three of the sites also contain a historic component (Section 2.2.4.2).

There are seven previously recorded temporary camps in Dry Lake Valley. Of these, two are located in treeless areas along large Pleistocene washes, one is located along the eastern edge of the playa, one is located in the pinyon-juniper zone, and three are located adjacent to springs. All of the three temporary camps located at springs contain

Site No.	Description	Cultural Affiliation
26 Ln 364	Temporary camp near Coyote Springs	Sevier
26 LN 365	Rock shelter	?
26 Ln 808	Small temporary camp in dunes	?
26 LN 1501	Isolated Flake	?
26 LN 1502	Isolated Flake	?
26 LN 1503	Isolated Flake	?
26 LN 1504	Isolated Biface	?
26 LN 649 & 1664	Temporary camp and quarry	Sevier & Shoshone
26 Ln 1613	Lithic scatter	?
26 Ln 1680	Temporary camp	?
26 Ln 1681	Lithic scatter	?
26 Ln 1737	Temporary camp	?
BLM 1052	Isolated flake	?
BLM 1126	Lithic scatter	?
BB-DLV-1	Temporary camp	Archaic
BB-DLV-2	Lithic scatter	?
BB-DLV-3	Chipping Circle	?
DLB 3	Lithic scatter	?
DL-Y1	Milling station	?
DL-S	Isolated flake	?
EB-A1	Isolated flake	?
EB-A2	Isolated flake	?

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PREVIOUSLY RECORDED PREHISTORIC SITES IN DRY LAKE VALLEY

TABLE 2-1

Site No.	Description	Cultural Affiliation
EB-A7	Lithic scatter	?
26 Ln 1873	Isolated biface	?
26 Ln 1874	Chipping circle	?
26 Ln 1875	Lithic scatter	?
26 Ln 1876	Isolated biface	?
26 Ln 1877	Isolated Projectile Point frag.	?
26 Ln 1878	Isolated Projectile Point frag.	?
26 Ln 1879	Isolated Cottonwood Projectile Point	Late Prehistoric
26 Ln 1881	Isolated scraper	?
26 Ln 1882	Isolated scraper	?
26 Ln 1884	Lithic scatter and historic bottle	?
26 Ln 1885	Isolated Cottonwood Projectile Point	Late Prehistoric
26 Ln 1886	Isolated scraper	?
26 Ln 1887	Isolated Elko Projectile Point	Archaic
26 Ln 1888	Isolated Pinto	Archaic
26 Ln 1889	Isolated Humboldt Concave Base Projectile Point	Archaic
26 Ln 1890	Lithic scatter	?
26 Ln 1893	Temporary camp (& historic camp)	?
26 Ln 1894	Lithic scatter	?
26 Ln 1895	Isolated Biface	?
26 Ln 1896	Lithic scatter	?
26 Ln 1897	Lithic scatter	?
26 Ln 1898	Isolated biface	?

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PREVIOUSLY RECORDED PREHISTORIC SITES IN DRY LAKE VALLEY

TABLE 2-1

Site Type	Number
Temporary camps	6
Temporary camps/quarries.	1
Rock shelters	1
Milling stations.	1
Chipping circles.	2
Lithic scatters	12
Isolated artifacts.	22
TOTAL	45

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SUMMARY BY SITE TYPE OF PREVIOUSLY RECORDED PREHISTORIC SITES IN DRY LAKE VALLEY

TABLE 2-2

Sevier gray-ware pottery; the camp at Rattlesnake Spring contains Shoshonean pottery as well. This is the only Shoshonean pottery recorded in Dry Lake Valley, which contrasts strongly with nearby Muleshoe, Pahranagat, and Meadow valleys, where numerous temporary camps containing both Sevier and Shoshonean components are recorded. (Fowler and Sharrock, 1973; HDR Site Forms.) However, most of the temporary camps recorded in adjacent valleys are located in the pinyon-juniper zone, and in Dry Lake Valley the pinyon distribution is restricted to the upper slopes of the Bristol and Fairview ranges, well out of the present project area.

An archaic component was recorded at two of the temporary camps: at one, a single Pinto series point; and at the other, a Pinto, an Elko, and a Cottonwood point, and Sevier pottery. Five isolated diagnostics have been recorded in Dry Lake Valley, including one Humboldt Concave Base, one Pinto, one Elko, and two Cottonwood projectile point types. No diagnostics are documented at the previously recorded rockshelter or milling station, or at any of the chipping circles or lithic scatters.

In summary, previous investigations in the project area have not provided much information about prehistoric occupations, except perhaps to suggest that utilization was extremely limited.

2.2.2.4 National Register Sites

Several of the previously recorded prehistoric sites may be eligible for inclusion in the National Register of Historic

Places; however none is currently listed on the Federal Register (February 20, 1981).

2.2.3 Ethnographic Overview

2.2.3.1 Ethnographic Groups

The ethnographic occupants of Dry Lake Valley were speakers of Numic languages, the northernmost branch of the Uto-Aztecan linguistic family (Miller, 1966).[1] The northern edge of the project area delimits the tentatively reconstructed boundary between the Western Shoshoni, or Central Numic, and the Southern Paiute, or Southern Numic.[2]

Very little specific information is available on the ethnographic inhabitants of Dry Lake Valley. Powell and Ingalls (1874; cited in Fowler and Fowler 1971) mention two Southern Paiute groups in the area, the "Pah-ran-a-guts" with 171 members in Pahranagat Valley and the "Tsou-wa'- ra-its" with 155 members in Meadow Valley.

These groups are listed by Kelly (1934) as the "Panaca" and "Pahranigut" bands. Kelly (1934) divides the Panaca and

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[1] The term "Numic" is drawn from John Wesley Powell's (1867-1880) general designation, "Numa," for groups in the Desert West and corresponds to Kroeber's (1907, 1925) Plateau-Shoshonean branch and to Steward's (1937, 1938) and Lowie's (1924) Shoshonean branch.

[2] For other names for these groups, see Kroeber 1907, 1925; Steward, 1937, 1938; Kelly, 1934, 1976; Miller, 1966, Stewart, 1966.

Pahranigut bands along the crest of the Pahroc Range, which puts Dry Lake Valley in the Panaca band's territory. The boundary between the Panaca band and their Shoshoni neighbors to the north is drawn somewhat arbitrarily between Muleshoe Valley and Dry Lake Valley (Kelly, 1934). This line is not firm because of the paucity of ethnographic evidence; however, it corresponds to Steward's (1937) and Stewart's (1966) boundaries.

It is likely that Dry Lake Valley, a marginal resource area, was used by a number of different groups, depending on the local availability of various resources.

2.2.3.2 Subsistence and Settlement Patterns

No specific information is available on the bands centered near Dry Lake Valley; however, the general pattern of subsistence activities can be inferred from the general ethnographic pattern of closely related groups. Although language and sometimes local variations in customs distinguished these groups, the Southern Paiute and Western Shoshoni had very similar subsistence patterns. The constraints of an arid environment with widely dispersed and only seasonally available resources produced the similar adaptive strategies ethnographically recorded over much of the Great Basin (Steward, 1938).

Ethnohistorical evidence indicates that the Southern Paiute in areas adjacent to Dry Lake Valley practiced horticulture, planting corn, beans, and squash along permanent streams, but this was very limited in scope and restricted to areas with

permanent streams. (Euler, 1966; Fowler, 1966; Kelly, 1976; Nye, 1886).

Hunting and gathering formed the basis of subsistence throughout most of the Great Basin, with tools, seasonal movements of families, population density, and the location and nature of cooperative enterprises adjusted to the kind and distribution of plants and animals (Steward, 1938). Because the area is extremely arid, the locations of permanent water sources, especially springs, were of paramount importance. Altitude and cold temperatures were also important constraints, restricting permanent winter settlements to a comparatively narrow zone near the base of mountain ranges, and excursions into arid valleys were temporary and for special purposes (Steward, 1938). Temporary camps were located near permanent or special resources. In Dry Lake Valley, such areas included the springs at the base of the foothills, the playa edges, and the higher elevation pinyon zones.

The pattern of resource procurement activities varied according to the seasonal availability of different resources. Pinyon pine nuts were harvested in the fall in large quantities and stored for winter use. The pine nut was a major food source; however, its yield varies from year to year (Steward, 1937). Fowler's informants from the eastern areas (1966) stated that pinyon nuts were harvested in quantity only every 3 years. Fall was also the time of the annual communal rabbit drive (Steward,

1937; Kelly, 1976), although rabbits and other small game were taken year-round. Mule deer and antelope were the most commonly hunted large animals, but mountain sheep were taken when they could be found.

Spring often brought starvation, because food caches were depleted and other plant resources were scarce (Kelly, 1976). Juniper berries and sage seeds (Artemisia tridentata and Artemisia nova) were sometimes eaten as starvation food (Steward, 1938). Communal antelope drives were held in the spring (Steward, 1938).

In the summer, a wide variety of grass seeds, yucca, and cacti were eaten; Indian ricegrass was especially important (Kelly, 1976; Steward, 1938). The grass seeds ripen throughout the summer and early fall at different elevations, providing a fairly constant food source. According to Fowler's (1966) informants, ricegrass seeds were gathered extensively in the eastern area and were a daily staple during the summer.

Lizards, snakes, and rodents were also eaten in some areas, although the varieties eaten varied locally (Fowler, 1966). Insects were an important food source among several groups.

Fowler's (1966) search of the ethnographic literature indicated little evidence of the use of waterfowl as a major food resource. In some areas, where migratory ducks stopped over to feed, large numbers were harvested (Stewart, 1942; Fowler,

1964). In other areas, resident species were taken in small numbers as available. In Dry Lake Valley, waterfowl may have been used on a seasonal basis.

The recent distribution of flora and fauna in Dry Lake Valley would have provided only marginal resources to the ethnographic inhabitants. Pinyon is restricted to the mountain ranges. Deer are common in the foothills, and mountain sheep and antelope were available historically. Rabbits, lizards, rodents, and insects are abundant in the lower valley. A few ducks are current residents of the small, man-made reservoirs, and migratory or nearby resident waterfowl may be attracted to valley basins during the periodic flooding of the playa. Native grasses in Dry Lake Valley include Indian rice grass, bromes, galetta grass, and a little ryegrass, but these may have had a much wider distribution in the past. According to Cottam (1961) and Young, et al. (1976), the widespread distribution of sage and rabbitbrush communities in parts of the Great Basin (Dry Lake Valley, for example) may be related to overgrazing during the past century. Grasses may have been much more prevalent in ethnographic times than the present plant distribution indicates (Steward, 1938).

2.2.3.3 Historic Descriptions of Ethnographic Groups

Specific ethnohistorical and ethnographic descriptions of aboriginal life in the vicinity of Dry Lake Valley are generally lacking except for a description of shamanistic practices of one

individual from the Pahranagat Valley (Kelly, 1939). Two early historical accounts of visitors to the area, however, give brief descriptions of aboriginal life. One is a retrospective account of a small party of prospectors' sojourn in the Pahranagat Valley in 1865. The story was written by William Nye, a member of the group, and was published in 1886 in the Overland Monthly. The party stayed through the winter and camped on the slopes overlooking the valley.

> Our camp on the mountain, as it happened, was not far from the wickyups of Pah-Witchit, the Indian chief, and his band, who at that time with women and children, were supposed to number some two hundred persons, the most of whom were making their winter home at the springs near the head of the valley. Pah-Wichit, as we had occasion to know, looked upon the valley and its neighborhood as a kind of Naboth's Vineyard, and of great price....
>
> The case was serious, for at that time we knew that what little grass seed and corn they had gathered in the autumn, and stored away in sundry holes in the ground near their wickyups, had been nearly exhausted, and they were driven in some cases to such sustenance as roasted lizards afforded....(295).
>
> Pah-Wichit was no wild, painted-faced savage, like some of his red brothers of the North. It would seem that once, at least, he had visited the Mormon settlements in Southern Utah, and learned enough of the Mormons to draw the line sharply between them and the Merry-cats (Americans). For he said: 'Merry-cats to-wick-a-wy-no' (very good); 'Mormon cots' (no good). Yet Mormon civilization had already begun his education by clothing him in her cast-off garments. For the coat he wore was dingy and grease-spotted - it had no doubt done service for some immigrant Mormon proselyte....(294-297)

The band referred to above may be the same one mentioned by Powell and Ingalls in 1874, under different leadership.

In any case, it is clear that even as early as 1865, the coming of Euroamericans had already seriously affected native life-styles. Although starvation was probably common aboriginally, the availability of native resources, such as grasses and game foods, may have already been diminished by emigrants and their herds of livestock traveling through the area.

The critical restraints of resource availability on native subsistence patterns, possibly aggravated by the intrusion of Euroamericans, is further illustrated by another early account of the Dame exploring party, which passed through Dry Lake Valley in 1858 (Section 2.2.4). The following exerpts from the diaries of one of the members of the party is taken from Martineau's recount, published in 1890 in The Contributor. The party, two days without water, suddenly came upon a lone Indian standing near a small brush wickyup near a solitary rock outcrop on the plain. After being terrified, captured, and finally reassured,

> "he indicated that water could be obtained by digging holes in a dry, sandy gulch nearby. A hole two feet deep was quickly dug as a test, and little by little the water trickled slowly in....
>
> Poor fellow! He was but a skeleton himself. We gave him food enough to last him, as we supposed, four or five days; but he began to eat and did not cease until none was left. Then he brought out his own store - a mouse, two field rats, a blue lizard a foot long, and four rattlesnakes. He buried all of these - except the mouse which he took whole - in the hot embers of our fire, and when roasted began to eat them ... His horrified feast continued until he had finished everything, and yet he must of known that when we left

> him he would be perfectly destitute of food. The previous winter hundreds of these Indians had died, living as long as they could upon grass and the inner bark of cedar and juniper trees.

2.2.3.4 Contemporary Native American Concerns

The present survey did not address Native American concerns. The Air Force is currently preparing a compendium of potential concerns in MX construction valleys, but this is still only in draft form. Facilitators Inc. has also recently completed an initial survey that solicited areas of concern to Native Americans. Although the results are preliminary, no sensitive areas were identified in Dry Lake Valley. On the other hand, several areas of concern were noted in Delamar Valley, directly south of the project area.

2.2.4 Historical Overview

2.2.4.1 Regional Chronology

The origin of the name Dry Lake Valley is problematical. On the early maps and in the literature, there is confusion over this subject and today many residents of Lincoln County refer to the basin of Delamar and Dry Lake as Delamar Valley. This report uses the name Dry Lake Valley following the maps of the U.S. Geological Survey. Table 2-3 provides a chronology of major historic events in Dry Lake Valley.

a. Early Exploration Near Dry Lake Valley: Between the years 1776 and 1848 numerous explorers passed near the study area. The first of these was the Dominguez-Escalante expedition of 1776

Date	Event
1849	Death Valley Forty-Niners crossed valley in November.
1854	John C. Fremont crossed the valley on his fifth expedition in February.
1858	Mormon exploring party under William H. Dame explored the valley and surrounding region.
1864	Silver claims located near Pioche in March. Panaca settled May 6 by 17 people.
1865	Mt. Irish silver ore discovered March 17. This led to the first wagon road established across Dry Lake Valley
1871	Bristol Mining District organized April 10.
1878	Post Office of Bristol (Well) established October 15.
1882	Comet District ore discovered.
1892	Delamar District developed.
1899	First land patented in Dry Lake Valley is 40 acres near Coyote Spring by Henry Hager.
1901	The Salt Lake Route (the Union Pacific Railroad) reached and established Caliente during August.
1938	Land at Ely Springs Ranch, patented by Robert Thorley et al.

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DRY LAKE VALLEY HISTORICAL CHRONOLOGY

TABLE 2-3

which passed to the east. In 1826, Jedediah Smith passed by the same area and in 1830 Peter Skene Ogden, chief trader of the Hudson's Bay Company, also traveled the same route (Scaglione, 1949).

Antonio Armijo established the Old Spanish Trail, southeast of Dry Lake Valley, and parts of that trail were used in 1830 by traders William Wolfskill and George C. Forest.

Government explorer John C. Fremont, returning from Oregon and California, followed the Old Spanish Trail eastward in the spring of 1844 (Fremont, 1845), and Miles Goodyear took this old trail to Los Angeles in 1846. For the next 2 years, travel was extensive between Salt Lake City and Los Angeles, where the Mormons bought supplies to build their new Zion (Hafen and Hafen, 1954).

b. Dry Lake Valley Exploration: It appears that three pioneer trips: the Death Valley Forty-Niners, John C. Fremont, and William H. Dame, took the same route across Dry Lake Valley.

The Death Valley Forty-Niners

The first group of Euroamericans to cross Dry Lake Valley became known as the Death Valley Forty-Niners. In the fall of 1849 a large group of emigrants bound for San Francisco gathered near Salt Lake City. The deaths of Donner expedition members in the Sierras in 1846 had proved the danger of taking the northern road along the Humboldt River late in the season. The southern route to the Old California Trail and back north to the gold

fields was much longer, but considerably safer. Accordingly, some 100 emigrant wagons under Captain Jefferson Hunt headed south on October 2.

While traveling, the group learned of a shortcut that would save hundreds of miles. This information and a map came from Barney Ward, a mountain man who had supposedly traveled over this route three times. It is possible that he traveled through the project area; however, his route has not been authenticated.

On November 4, a large group of wagons struck out for Ward's shortcut, leaving only seven wagons behind with Captain Hunt. They ascended Shoal Creek at Enterprise, Utah, and turned south near its head. At the brink of a deep canyon on Beaver Dam Wash, just west of present Beaver Dam State Park, the wagons were stopped. The emigrants termed this place "Mount Misery."

Because they were not able to find a way to descend with wagons, many turned back to the Old Spanish Trail; others on horseback worked their way down, and some with teams abandoned their wagons to became packers. About 27 wagons turned north around the head of Beaver Dam Wash; this group was known as the Death Valley Forty-Niners and became the first to travel across Dry Lake Valley.

After leaving Mount Misery the first week in November, the Death Valley Forty-Niners traveled north a few miles, then headed west into the Clover Creek drainage near Acoma. The route continued

across the Cedar Range near Mosey Mountain and it crossed Meadow Valley Wash about 4 miles south of Panaca. The group camped at Bennett Springs (Long, 1950).

The emigrants went on to cross Dry Lake Valley. As Sheldon Young's journal is the first detailed description of this region, his log from Bennett Springs is quoted in full (Long, 1950):

> [Nov. 1849] 14th. Bore North of West. Went ten miles hard roads. Had a dry camp, neither grass or water. It rained and snowed in the afternoon enough to whiten the ground, but went off as fast as it fell.
> 15th. Had good roads went six miles North of West, found water but not much grass. It is dry Sandy Desert. Went eight miles and camped on oposite [side] of the valley, grass scarce, no wood or water. North-West course.
> 16th. Had a hard over range of mountains. No grass or water. It is a dismal looking country. There is nothing growing but greasewood. Went eight miles and camped at a spring. Not much grass. Bore North of West.
> 17th. This day had a rough for four miles, then came into a narrow valley. There is no running water. Rain water standing in the puddles. Grass, it is scarce, wood there is none. It is a dubious looking country. Went ten miles, a North-West course.

According to modern topographic nomenclature, the group crossed Bennett Pass, descended Black Canyon south of the Bluffs, switched to Dog Hollow drainage, and camped near the north end of Robbers Roost Hills on the 14th. The next day they found water in Coyote Wash (about two miles north of the dry lake in Dry Lake Valley), and spent the night two miles beyond at another dry water course. On the 16th, they continued northwest and found water at what appears to be Hamilton Springs, where

they camped. The next day the party made their way about four miles to White River drainage, where they came out about 9 miles north of the White River Narrows, passing out of the study area.

The most accurate map of the Forty-Niners route is in Carl I. Wheat's (1960) "Mapping the Transmississippi West." Wheat's discussion of the Mormon maps of the mid-1850's describes a James H. Martineau map of the William H. Dame 1858 exploring expedition, noting that they followed the Forty-Niners trail for a hundred miles. The reproduction of Martineau's manuscript map (in the Later-Day-Saints archives, Salt Lake City) makes possible an accurate delineation of the emigrants' route across Dry Lake Valley.

<u>John C. Fremont</u>

John C. Fremont appears to be the next explorer to have crossed Dry Lake Valley. Fremont outfitted his fifth and last transcontinental expedition at Westport (now Kansas City), Kansas, during September, 1853 (Nevins, 1928). At that time, Congress had ordered several railroad routes to be explored to the Pacific. Fremont financed his own expedition to prove the existence of a route between the 37th and 38th parallels.

The expedition traveled westward from Westport but the men began to have problems in the snowy mountains of southern Utah. Exhausted, sick, and hungry, the men reached Parowan on February 8. The Mormons there treated the explorers hospitably, feeding

them and nursing them back to health. Atlhough still weak, Fremont decided to take a direct line toward the southern Sierra; with 18 remaining men, Fremont headed almost due west from Cedar City, a few miles southwest of Parowan.

No author has attemped to accurately trace Fremont's 1854 route across Nevada. However, the map published in his Memoirs (Fremont, 1887) shows his camps and line of travel commencing near the juncture of the 38th parallel and 115th longitude, near the north end of the Seaman Range. The route continues south-west along the north edge of Pahute Mesa, west toward Magruder Mountain, then south through the west portion of present Death Valley National Monument.

In the study area, Fremont's map delineates only a series of hachured mountains. As his routes are shown both east and west of Dry Lake Valley, it is likely that Fremont followed the trail left by the Death Valley Forty-Niners in the project area.

William H. Dame

In the spring of 1858 two Mormon exploring expeditions were sent into present eastern Nevada to search for possible settle-ment areas. One, led by George Washington Bean, explored the Ely region, north of the study area. The other, led by Colonel William H. Dame, rendezvoused at Iron Spring west of Cedar City, and marched west following the route of the lost Death Valley Forty-Niners "for more than a hundred miles." (Martineau, 1890). Sixty-six men comprised this party, including Asahel

Bennett who had been one of the 1849 Death Valley members. The present Bennett Spring is named for Asahel.

This southern company was also called the "Desert Mission." They went as far west as the Grant Range and north to the present site of Ely. From Bennett Spring on May 4, Martineau's journal relates that they "went to top of divide 4-1/2 miles, then 1-1/2 miles to the head of canyon, then down a dry wash canyon to its mouth and entrance into valley 9 miles, thence across the valley 13 miles to Rock Point Hill and camped about 6 p.m. Total distance 28 miles" (Wheat, 1960).

The following morning the Dame party went on to White River Wash and later contacted the Bean group. After parting, Col. Dame's force returned to Meadow Valley, which they named, and cleared land at the present site of Panaca.

c. The Mining Period: Several mining districts were established in the mountains surrounding Dry Lake Valley between 1865 and 1892. These districts include Pahranagat, Pioche, Silverhorn, Bristol, Ely Springs, Comet, and Delamar (Ferguson).

The earliest mining district organized in Lincoln County was Pahranagat on the south flank of Mt. Irish. Silver was discovered here on March 17, 1865. The following year the country was thoroughly explored again (Rood, 1866), and Lincoln County was formed on February 26, 1866 from a part of Nye County to accomodate the district (Tschanz and Pampeyon, 1970). Two

mills in the district and one at Hiko were built to treat the siver ores.

However, the mills were not particularly successful, and only a small sporadic production has been reported. The Pahranagat District was largely abandoned after the rich ores at Pioche began producing.

The next important mining center developed near Dry Lake Valley was Pioche, where the first claims were made in 1853. By 1873, Pioche was the largest silver producer west of the Rocky Mountains, except for Virginia City. This mining boom ended about 1879 and subsequent periods of major production occurred between 1895 and 1901, 191? and 1920,1934 and 1953. Pioche was the main community for a number of camps and districts that sprang up in the region.

Silverhorn was a small unorganized district, about 3.5 miles (6 km) north of Bristol Well, where horn silver was discovered in 1906. The district was very active in 1921, but the boom was soon ended by the lack of mineable ore (Paher, 1970; Tschanz and Pampeyan, 1970).

The Bristol District, a few miles south of Bristol Well, was organized April 10, 1871 and has continuously produced ore since 1868. Through 1958 the production amounted to $16,256,000 in gold, silver, copper, lead, zinc, and manganese. The Bristol Well historic site is discussed in more detail below. Informa-

tion on the Bristol District is found in Harris (1973), Paher (1970), Tschanz and Pampeyan (1970), and Westgate and Knapf (1932).

Ely Spring's unorganized district is located 12 miles (19 km) south of Bristol Well on the west flank of the Ely Spring Range. Ore was discovered here as early as 1917, but the only production came much later from the Hedman (King Midas) mine.

The Comet District is located on the west side of the Highland Range, six miles southeast of the Ely Springs District. Ores were discovered in 1882, but production prior to 1895 is unknown. Silver-lead ore containing small amounts of gold and silver was shipped between 1895 and 1898 and between 1913 and 1920. Most of the ore came from the Schodde Mine, which produced $125,000 during World War I. The 1895 to 1952 production from the Comet District has amounted to $764,100 (Tschanz and Pampeyan, 1970).

One other district that had an impact on the region is Delamar (Ferguson), located on the west side of the Delamar Mountains. The Ferguson brothers, farmers from Pahranagat Valley, discovered gold ore here in 1891. The district was organized the next year, and a town called Helene grew up near the Magnolia mine. In 1893 Delamar became the principal town in the district. This district became the premier gold producer of Nevada with nearly $15 million mainly in gold and silver through 1950 (Tschanz and Pampeyon, 1970).

d. Early Settlements in Dry Lake Valley: The first land patented in Dry Lake Valley proper was 40 acres (16 h) about 0.5 mile (1 km) east of Coyote Spring. This land was taken up in 1899 by Henry Hager. The BLM Township Plot, surveyed in 1882, shows a "house" located here, which was probably a stage station. Another 40 acres (16 h) were patented just north of Coyote Spring in 1922 and 40 more acres around the springs were taken by Charles Thorley in 1939.

According the the Pioche Record, "the foulest murder ever in Southeastern Nevada" occurred at Coyote Spring during May 1873. On May 16, Daniel Hollond, from Bristol, passed by and found two bodies in Coyote Spring. The murdered men were Charles Sanbourne and Gus Wright from Pioche, and "each body had several bullet-holes in it, all directed to vital parts" (Pioche Record, May 20, 1873).

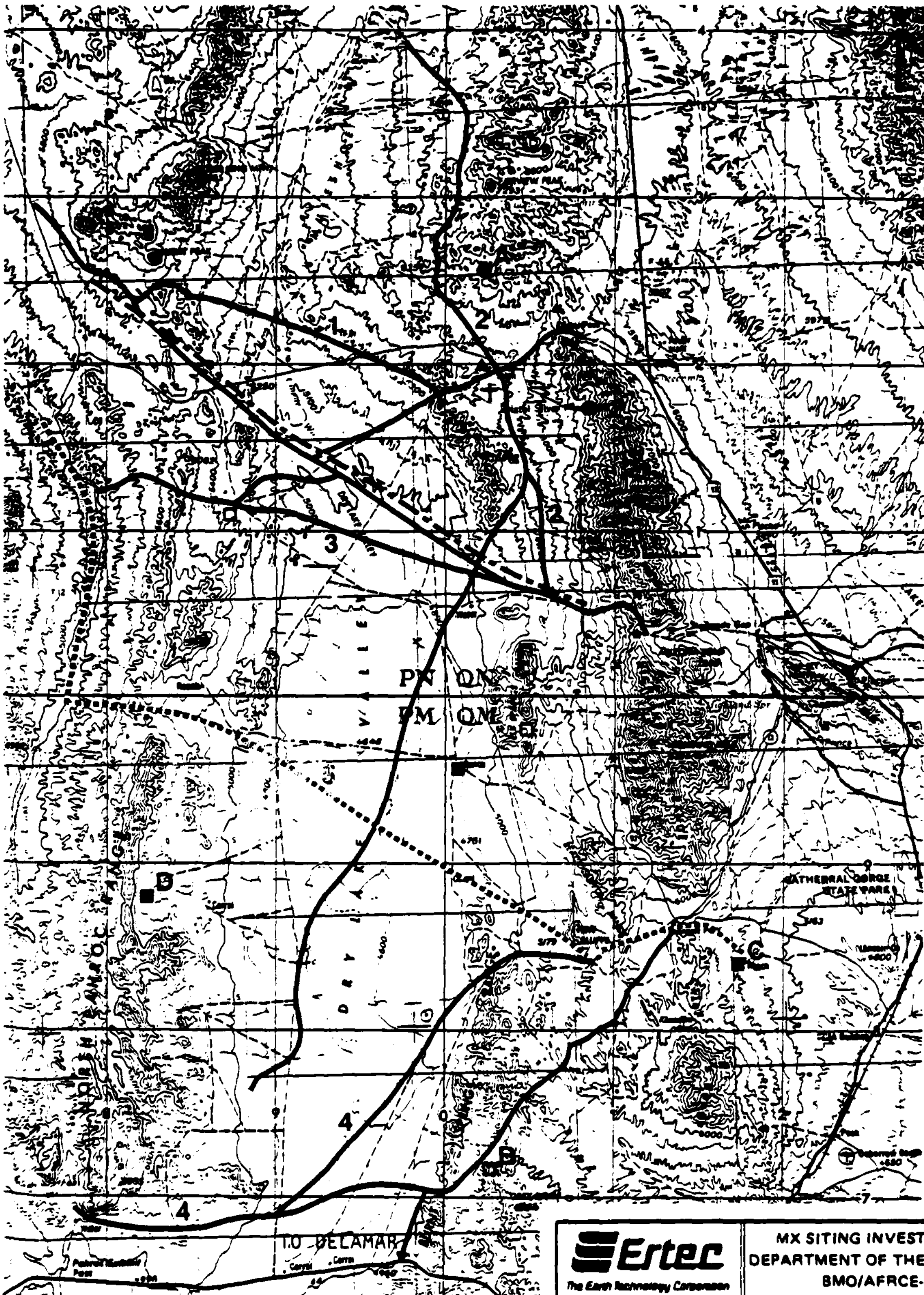
Southeast across the valley, another 200 acres (81 h) were selected by the state of Nevada at Ely Springs in the Ely Springs Range. This was privately patented in 1919 and is presently owned by the Kent Whipple Trust. The land here was settled years ago; the 1881 cadastral survey located a "stone house" below the upper springs. The Pioche Record (1889) noted the death of Mr. L. Foss, who "for many years...lived entirely alone at Ely Springs ...occasionally coming in to obtain supplies and a few newspapers."

Ely Springs Ranch is located three miles to the southwest of Ely Springs. Robert Thorley and others patented about 600 acres (243 h) at the site in 1938 (now owned by Kent Whipple Trust). The abandoned, one story, wood frame building on the site probably dates from the late 1930's.

Rattlesnake Spring on the east side of the North Pahroc Range may have been inhabited by Euroamericans before 1900, at least temporarily. An especially important historical site within the Dry Lake Valley basin is Bristol Well. These sites are described in Section 2.2.4.2.

e. Early Government Surveys: The Wheeler Survey mapped vast sections of the West between the Rocky Mountains and the Sierra Nevada during the 1870's. This survey crossed Dry Lake Valley during 1869 on its first western excursion. The U.S. Department of Agriculture sent a group to the Mojave Desert in 1891 to study the flora and fauna. Expedition members crossed Dry Lake Valley, noting that the most northern occurrence of the Joshua tree was locate' there. (Merriam, 1893).

f. Pioneer Transportation Routes across Dry Lake Valley: The following discussion summarizes the transportation routes across Dry Lake Valley. Very little has been written about this historical phase in Lincoln County, and the following is compiled from maps, articles, and advertisements in the Pioche Record, and from a "Nevada Travel Routes" list in HDR Sciences, Inc. (1980) and Angel (1881). Figure 2-1 locates these routes, and Figure 2-2 provides the key to symbols on Figure 2-1.



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HISTORIC CULTURAL RESOURCES MAP

PAGE 1 OF 2

FIGURE 2-1

LEGEND

HISTORIC CULTURAL RESOURCES MAP

▲ BRISTOL WELL SITE

● GHOST TOWN

A. SILVERHORN

□ PRE-1900 BUILDING

B. CLIFF SPRINGS STATION

■ OTHER HISTORIC SITES

C. BENNETT SPRINGS

D. RATTLESNAKE SPRING

† GRAVEYARD

·········· ROUTE USED BY DEATH VALLEY EMIGRANTS (1849), FREMONT (1854), AND WILLIAM H. DAME (1858)

5. DEATH VALLEY 49ERS

——— EARLY TRANSPORTATION ROUTE

1. BRISTOL AND WHITE RIVER ROAD

2. BRISTOL AND PIOCHE ROAD

3. CHERRY CREEK ROAD

4. HIKO-PIOCHE ROAD

—·—·— TELEGRAPH

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HISTORIC CULTURAL RESOURCE MAP

PAGE 2 OF 2 FIGURE 2-2

Trail traffic over Dry Lake Valley gradually increased after the discovery of silver in the Pahranagat District in early 1865. The first consistently used road across the valley was made by miners traveling from Panaca to the Pahranagat District. From Panaca, the road went west to Bennett Springs, over Bennett pass, down Black Canyon, southwest along the edge of Dry Lake Valley Playa, and west to Pahroc Spring. Almost all of this road can be discerned today.

After the development of Pioche in 1869, historic activity in Dry Lake Valley dramatically increased. By early February 1870, a stage line was built to carry the weekly mail between Hamilton and Pioche (Buck, 1930). From Pioche, the route probably ascended northwest over Stampede Gap, past Delmues (or Swiss Bob) Well where there was a station, then west across Dry Lake Valley toward Coyote Spring to another station (Lloyd, 1980). The line of this route can also be seen today.

A route from Eureka to the north, passed through Cave Valley past Meloy and Bailey Springs to Bristol before continuing on to Pioche. From Bristol Well, several roads fanneo across the valley. The Bristol and White River Road (or Silver King and Sunnyside Road) struck north of west across the valley toward Burnt Peak, and the Bristol and Cherry Creek Road went southwest past Coyote Spring. Another prominent road cut south of Bristol Well past the east side of the West Range and continued to Pioche through Stampede Gap. Four miles south of Bristol

Well a road branched south-southwest to Pahroc Spring, skirting the west side of the playa.

Another Eureka to Pioche Road entered Dry Lake Valley south of Burnt Peak and continued southeast over Stampede Gap. As shown on the 1882 cadastral survey map, a telegraph line to Pioche followed this road.

The road from Bennett Springs to Hiko via Pahroc Spring has already been described. From Bennett Pass, another road struck southwest between the Burnt Spring Range and Delamar Mountains to Cliff Springs, where there was a stage station, and then west to Pahroc Spring. After the discovery of the Delamar deposits in 1891, a road turned south near Cliff Springs and continued to Grassy Spring before reaching Delamar. This was the established route between Pioche and Delamar before the Salt Lake Route of Union Pacific Railroad reached Caliente in August 1901, creating a distribution point for supplies. After that date, freight was hauled along a road a few miles west from Caliente to Oak Spring before connecting with the old road.

As the Union Pacific line reached Caliente, another railroad called the San Pedro, Los Angeles, and Salt Lake was working a grade up Meadow Valley Wash. Litigation held up the construction, and a settlement was not reached until 1904. The line was finally completed in early 1905 (Las Vegas Sun, 1956).

g. The Ranching Era: The first use of Dry Lake Valley as rangeland probably is not recorded. However, as early as 1864

sheep were brought in with the Lee family when they settled Panaca (Sawyer, 1971). A few years later, Franklin A. Buck, one of the early arrivals in Pioche, reported that he had returned from Utah with 158 head of cattle. However, cattle were apparently in the region at an earlier date as Buck noted that the country abounded in cattle and horse thieves (Buck, 1930).

In the early days, there were no range controls. The Taylor Grazing Act of 1934, promoted by a Colorado rancher, provided that western federal lands be established into grazing districts which would be controlled by boards of local ranchers, supervised by the Department of the Interior (Bureau of Land Management, 1979). It was felt that controls were needed to prevent range deterioration, protect the watershed, and stabilize the livestock industry.

Five Nevada grazing districts were proposed in 1934, however, their boundaries have been revised over the years. In addition, the districts were reduced to smaller units, and the units broken down into grazing alottments. Within Dry Lake Valley, some of these alottments are named Simpson, Ely Spring, and Oak Spring (Buckman, 1935, 1937; Bureau of Land Management, 1979). The grazing alottments in Dry Lake Valley are managed by the Ely and Las Vegas District BLM offices.

Several thousand cattle use the range in Dry Lake Valley which provides a very favorable winter range with abundant white sage or winterfat (<u>Ceratoides lanata</u>).

Groundwater in the valley is not close to the surface. Stockwater is provided by several developed springs and many reservoirs. The water resources of Dry Lake Valley were first described by Everett Carpenter (1915) and later by Charles T. Snyder (1963) and Thomas E. Eakin (1963). The scarcity of water in Dry Lake Valley has been known for some time. Carpenter noted only Bristol Well and Bailey, Coyote, and Maloy (Meloy) springs.

Springs such as Rattlesnake, Mustang, and Ely have been extensively developed for livestock use. Ely Springs has nearly 20 miles of pipeline extending to various troughs in the valley. Other prominent water developments are the reservoirs placed strategically on or near washes to collect surface runoff. The earliest construction of the reservoirs dates only to 1953 (Orr, 1980).

2.2.4.2 Previously Recorded Historic Sites

Most of the important historic sites in Dry Lake Valley, though often cited in the historic and archeological literature, have not been assigned site numbers. A total of ten historic sites have been formally recorded in Dry Lake Valley (Table 2-4).

During test excavations at Rattlesnake Spring, Brooks and Ferraro (1978) recorded a surface tin that "dates from prior to 1900 A.D." Other features include a probable corral consisting of two intersecting dry-laid stone walls up to a meter high. When the site was visited on November 11, 1980, a small purple

A. SITES

Number	Type
26 LN 364	Homestead near Coyote Spring
26 Ln 1507	Bristol City (National Register Site)
26 Ln 1664	Historic Camp near Rattlesnake Spring
26 Ln 1682	Historic Mining Camp
26 Ln 1872	Historic Camp
26 Ln 1883	Isolated Bottle fragment
26 Ln 1884	Bottle (also prehistoric lithic scatter)
26 Ln 1892	Isolated Bottle
26 Ln 1893	Historic Camp (also prehistoric temporary camp)
EB-A8	Isolated Ox Shoe

B. SUMMARY BY SITE TYPE

Site Type	Number
Isolated bottles (pre 1900)	3
Isolated ox shoe (ca. 1900)	1
Small historic camps (1915-1930)	4
Homestead (1920)	1
Bristol City (1871-1959)	1
TOTAL	10

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PREVIOUSLY RECORDED HISTORIC SITES

TABLE 2-4

bottle was located, possibly a pill container dating from the 1890 - 1910 period.

Bristol Well was included in the National Register of Historic Places on March 24, 1972. A reverberatory furnace was built here as early as 1872 to treat the ores from the Bristol mines four miles away. The mill was changed to a water jacket furnace in 1878 and ran for several years. Another mill was built here about 1890 to treat copper ores, but no metal was ever recovered.

The most conspicuous features at Bristol Well are the three, 20-foot high charcoal kilns. The kilns were probably built about 1872 when the first ore furnace was built; they were in use as late as 1890 (Pioche Record, 1890). All three of the standing kilns have their loading windows facing in different directions, which appears to be unique in kiln construction. Mary Francis Strong (1975) writes that the stones from a fourth collapsed kiln were used to build one of the two standing stone cabins by Mr. S. A. Hollinger several years ago. Hollinger also adapted one of the old mill walls into a low-roofed stable.

A graveyard is located about 0.7 mile (1126 m) south of Bristol Well. There appear to be 11 to 14 burials, including one outside of a fence which is in disrepair. Two badly weathered hand-carved head boards remain.

Little is known about the small historic sites. They probably relate to early ranching or mining activities in the area.

National Register Sites: Although many important places and districts in the vicinity of Dry Lake Valley may be eligible for nomination to the National Register of Historic Places, only one, Bristol City (also called Bristol Wells), is currently listed in the Federal Register (February 20, 1981).

3.0 FIELD RESEARCH

3.1 METHODS

3.1.1 Research Strategy

The archeological survey of Dry Lake Valley was designed to inventory and evaluate cultural resources in proposed MX construction areas. Procedures for conducting the survey, recording data, and making significance determinations were developed by the Air Force and its consultants in conjunction with the Bureau of Land Management and the Nevada State Historic Preservation Office. Because the Dry Lake Valley IOC project involved Class III inventory, locations of survey units were based on geotechnical and engineering criteria (see Volume I of this report) independent of archeological considerations.

The overall research design for inventorying, evaluating, and protecting cultural resources in proposed MX deployment valleys was not completed before the planning of the Dry Lake Valley IOC project. The preliminary research design (Woodward-Clyde Consultants, 1980) became available during the course of tne field work. It presents a set of problem domains or general questions about past human activities that serve to systematically structure the nature of archeological inquiry in the Great Basin. In addition, it proposes a model of subsistence and settlement (one of the problem domains) which stresses viewing logical sites in terms of their positions in a regional subsistence system. The model provides a useful construct for

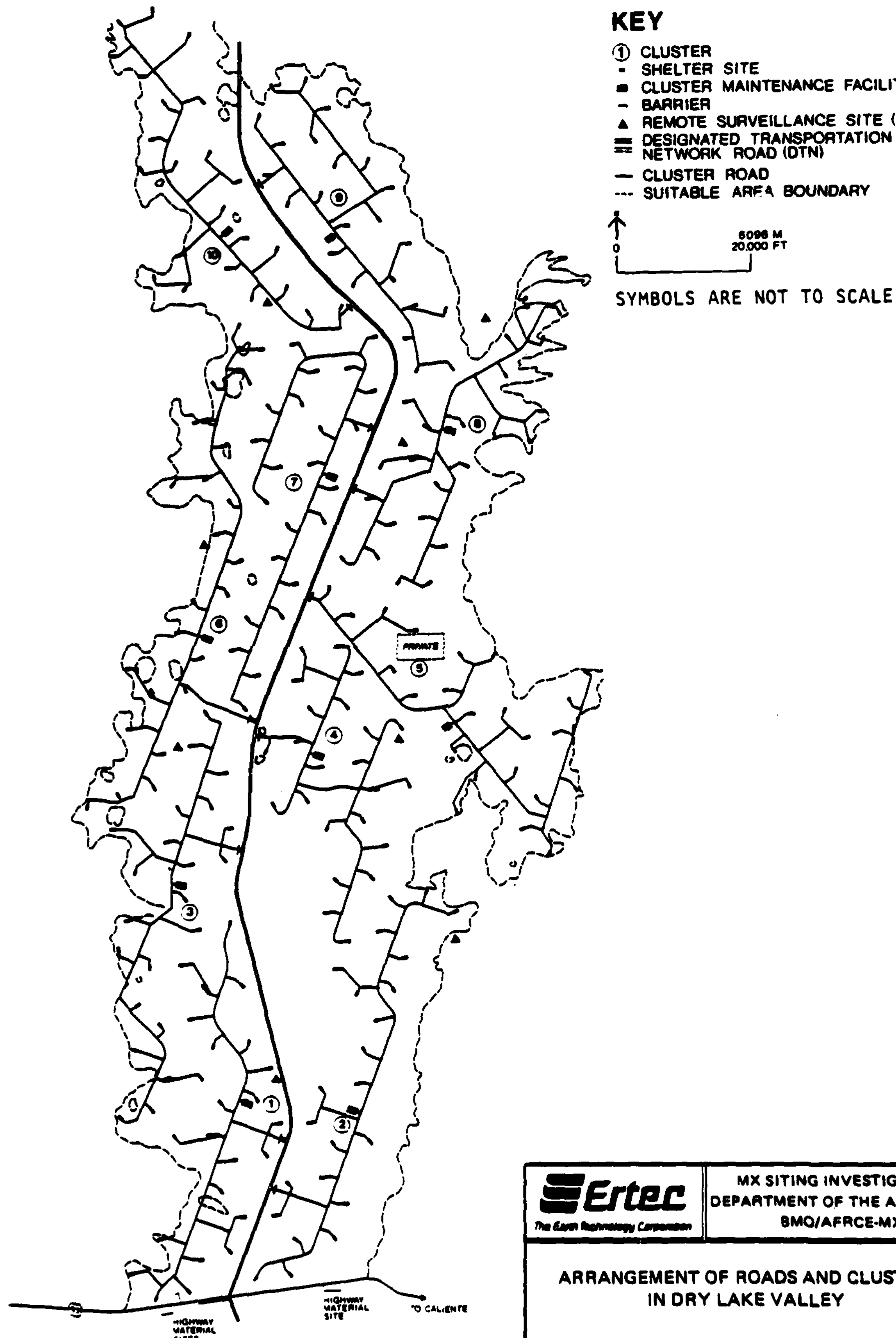
organizing information and is the working part of the research design.

Field survey procedures and data collection methods developed for the Class II regional inventory were used during the IOC cultural resources survey with some modifications needed to meet special requirements of the project and BLM policy. These modifications are reflected in the data collection form and are discussed in Section 3.1.3. Use of the procedures and methods developed for the regional survey results in consistency between the IOC data and data collected and analyzed during other MX cultural resources studies.

3.1.2 Location and Layout of Sample Unit Survey Areas

Three different kinds of construction sites were proposed in Dry Lake Valley: cluster shelter sites (HSS), remote surveillance sites (RSS), and cluster maintenance facilities (CMF). Each of these areas was treated as a survey sample unit for the cultural resources inventory project. Shelter sites are arranged in ten clusters, each containing 23 shelters. Each of the clusters contains one cluster maintenance facility. The five remote surveillance sites are scattered over the valley.

The arrangement of these sites in Dry Lake Valley is shown in Figure 3-1. Approximately 70 (113 km) miles of roadway were also surveyed, that is, the Designated Transportation Network (DTN) and the Cluster 2 roads.



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ARRANGEMENT OF ROADS AND CLUSTERS IN DRY LAKE VALLEY

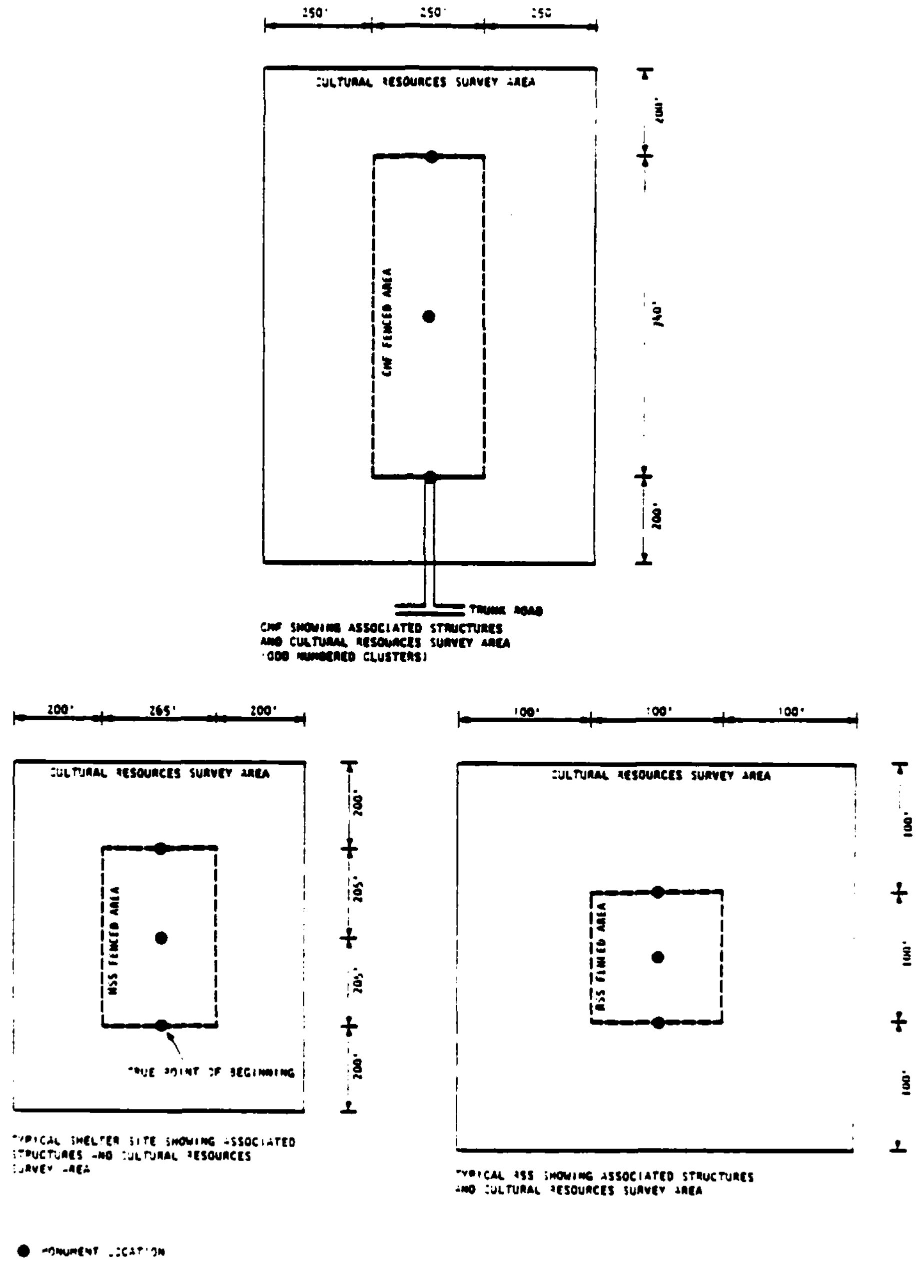
FIGURE 3-1

The area surveyed at each location was much larger than the area expected to be directly impacted by the facility itself, i.e. the area to be withdrawn and fenced. This larger area was intended to allow for disturbances to adjacent areas during facility construction. Figure 3-2 shows the area of direct impact (the fenced area) in relation to the survey area for the three types of facilities.

The survey sample units and roadways were plotted on 1:62,500 and 1:9600 scale topographic maps. These were used as field maps for locating survey units and plotting cultural resource data. The survey units, roadways, and archeological site locations were then transferred to U.S.G.S. 7.5 minute maps in the field laboratory.

Survey teams consisted of two field archeologists usually accompanied by two biologists. To minimize adverse impacts on the local environment, environmental survey teams used existing roads as much as possible and followed cadastral surveyors' tire tracks off-road, except for a few places where off-road tire tracks could not be located.

Each survey unit and road right-of-way was systematically examined for cultural resources by walking straight-line transects at 82-foot (25-m) intervals. This 82-foot (25-m) interval



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MX FACILITY LAYOUTS AND CULTURAL RESOURCE SURVEY AREAS

FIGURE 3-2

was used because it is considered intensive by the Bureau of Land Management and because it is the interval that was used in the MX-regional sampling survey.

The center line of the environmental survey area was identified by cadastral survey. Because only the center line was marked by the surveyors the perimeters of the survey areas were marked by the archeologists and/or biologists prior to conducting the survey. This procedure usually consisted of measuring the appropriate distances from the cadastral survey monuments to the survey perimeters and then establishing the corners with a right-angle prism. Measurements were made with metric-calibrated hip chains. Because the dimensions of HSS, CMF, and RSS units and the roadway networks vary, the procedures used to establish and transect sample survey areas are discussed separately for each below.

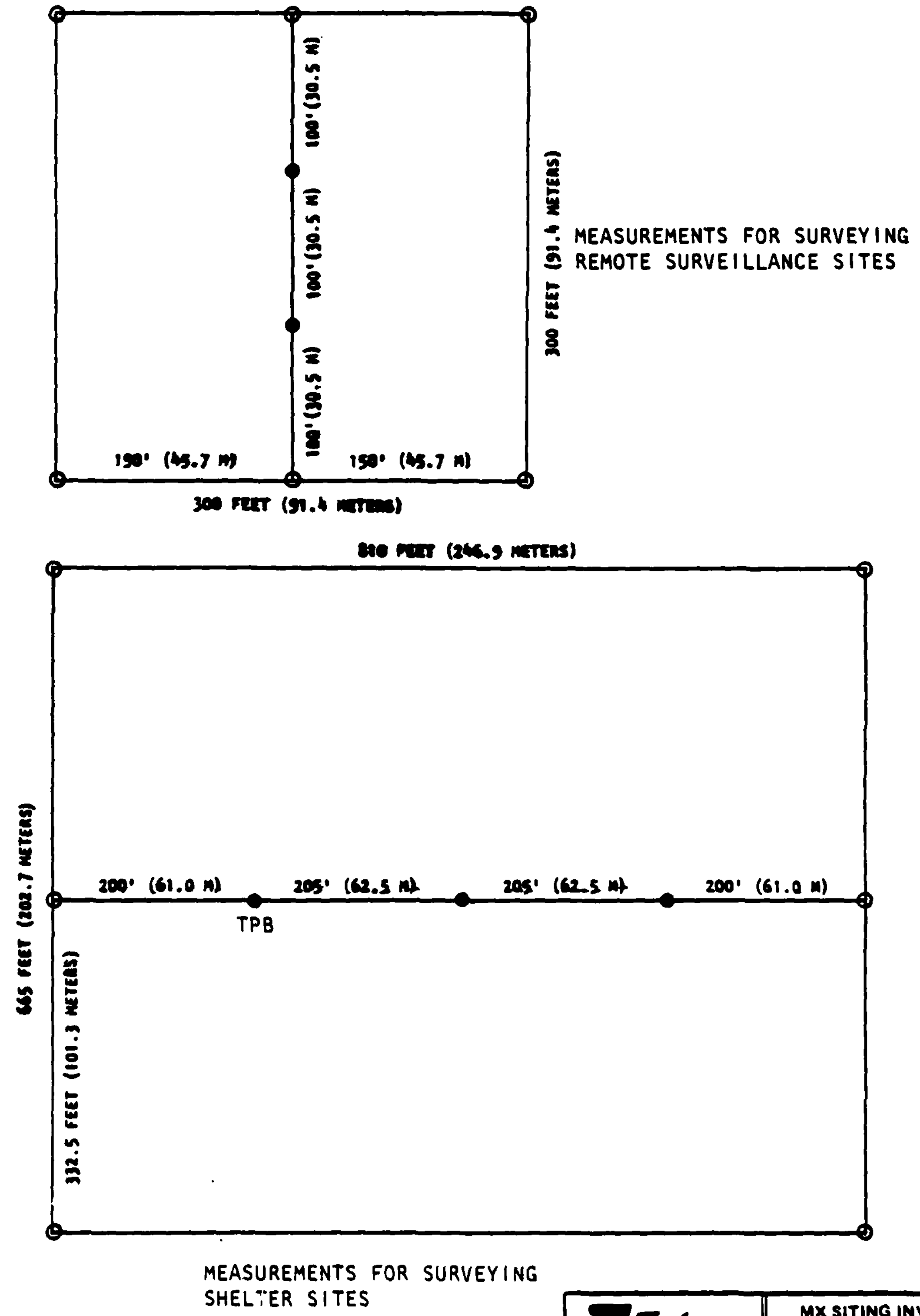
a. Shelter Sites. Shelter sites were identified on the ground by three capped rebar survey monuments and adjacent temporary survey stakes. The three survey monuments lie 205 feet (62 m) apart along the centerline of the long axis of each shelter site. The monument designating "the true point of beginning" (TPB), is located at the intersection of the shelter centerline with the fence line (i.e., rectangular fence configuration) at the front of the shelter, and is stamped with an arrow pointing into the shelter.

The survey area for each shelter site is 665 feet (203 m) by 810 feet (247 m), encompassing 12.36 acres (5 ha). The corners

of the survey area were marked as follows. First, a flag was placed along the centerline of the unit, 200 feet (61 m) from either the TPB or the end survey monument. Then a flag was placed at both corners 332.5 feet (101 m) out from and at right angles to the centerline flag. The procedure was then repeated for the other end of the survey unit. The layout of the survey area is illustrated in Figure 3-3.

After the perimeters of the survey had been delineated with flagged corners, the two archeologists systematically examined the area for cultural material by walking at 82-foot (25-m) intervals along the long axis of the unit. Specific transect placement within shelter survey units was determined in advance so that cultural and environmental data could be recorded on specially designed shelter sample unit map forms gridded at 25-meter intervals along transect lines. The transects were walked along the long axis of the unit at 41, 123, 205, and 287 feet (12, 38, 62, and 88 m) from both sides of the centerline flag.

b. <u>Remote Surveillance Sites</u>. Remote surveillance sites were identified on the ground by two capped rebar monuments and adjacent temporary survey stakes located 100 feet (30 m) apart. The survey area for each of the RSS sample units is 300 feet (91 m) by 300 feet (91 m), encompassing 2.06 acres (0.8 ha). The corners were marked by first placing a flag along the centerline 100 feet (30 m) out from the end monument. Corner flags were then placed 150 feet (46 m) out from and at right angles to



● EXISTING SURVEY STAKE

○ SURVEY PERIMETER REFERENCE FLAG

TPB TRUE POINT OF BEGINNING

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AREA SURVEYED AT SHELTER SITES
AND REMOTE SURVEILLANCE SITES

FIGURE 3-3

the centerline flag. The layout of the RSS survey area is illustrated in Figure 3-3.

Each RSS was surveyed with four transects located 82 feet (25 m) apart with the first placed along one side and the fourth located slightly outside the survey unit area.

c. Cluster Maintenance Facility. The survey area for each cluster maintenance facility (CMF) was 750 feet (229 m) by 1140 feet (348 m), encompassing 19.6 acres (8 ha). Although the fenced withdrawal areas for even-numbered and odd-numbered CMFs were projected to be different sizes, the same survey areas were inspected for both types. CMFs were located on the ground by three capped rebar survey monuments flagged by temporary survey stakes placed along the long axis of the CMF but offset from the survey area centerline. Monuments for the even-numbered CMFs were located 370 feet (113 m) apart. Odd-numbered CMF monuments were located 350 feet (107 m) apart.

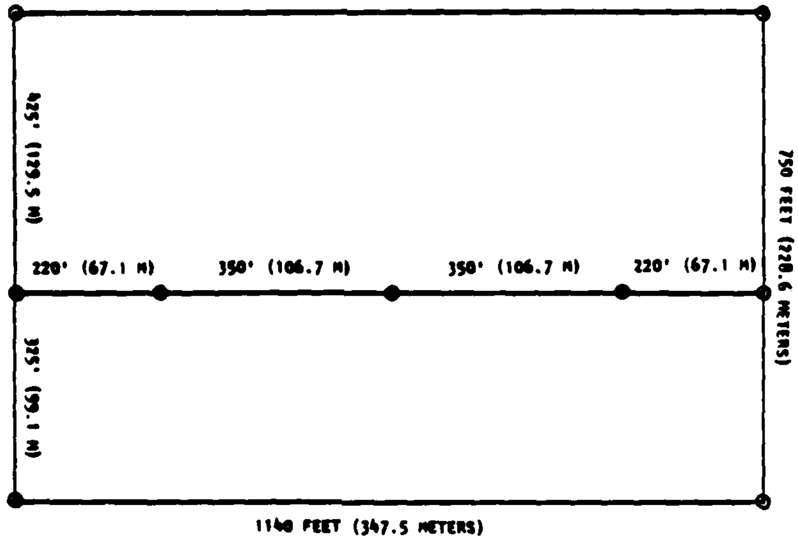
The corners of the even-numbered CMF survey areas were flagged in the following way. First, a flag was placed in line with the survey monuments 200 feet (61 m) out from the TPB monument, at the branch road end of the unit. Facing into the unit, the right hand corner was placed out 325 feet (99 m) and the left hand corner was placed out 425 feet (130 m), both at right angles to the monument line. The procedure was repeated in mirror image for the other end of the CMF. The same basic procedure was followed for the odd-numbered CMFs

except that the distance measured from the TPB monument to the flag was 220 feet (67 m) instead of 200 feet (61 m) to compensate for the shorter distance between survey monuments. The layouts of both types of CMFs are illustrated in Figure 3-4.

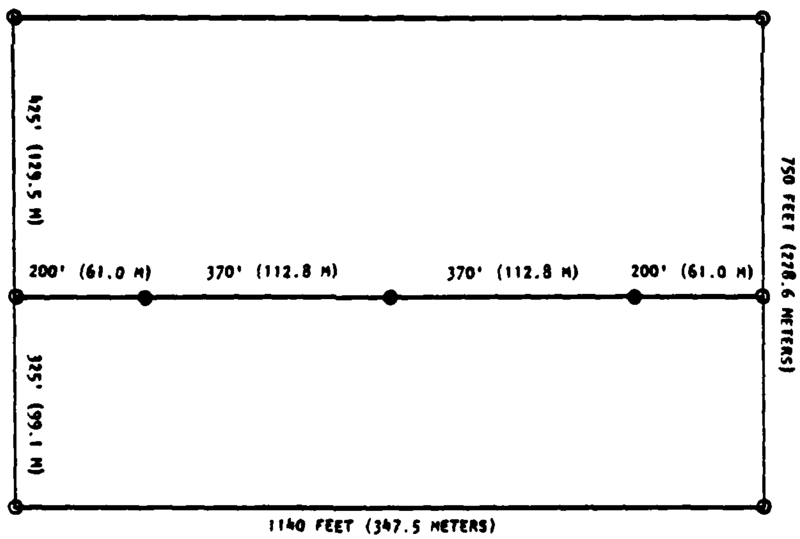
Each CMF was surveyed for cultural resources by walking ten transects at 82-foot (25-m) intervals along the long axis of the unit.

d. Road Networks: The DTN and Cluster 2 roads were indicated on the ground by temporary survey stakes spaced at approximately 0.25-mile (402 m) intervals. Turning points in the roads were indicated by larger, flagged stations called Points of Intersection (PIs). The width of the survey area along road right-of-way was 150 feet (46 m). Roads were inspected by two archeologists walking 82 feet (25 m) apart, each 41 feet (12 m) from the road centerline, along the entire length of the DTN and Cluster 2 roads.

The discovery of a large, prehistoric temporary campsite complex (MX-181-DTN-EB9) along the originally proposed DTN route in Sections 28 and 31, T3S,R64E, and in Section 21, T2S,R64E required relocation of a 5.5 mile (9 km) segment of the DTN. Hence, additional transects were walked through these sections at 164, 246, 328, and 410-foot (50, 75, 100, and 125 m) intervals to the west of the original road centerline to determine the outside boundaries of the archeological site and the feasibility of road relocation. The road was subsequently moved



MEASUREMENTS FOR SURVEYING ODD-NUMBERED CLUSTER MAINTENANCE FACILITIES



MEASUREMENTS FOR SURVEYING EVEN-NUMBERED CLUSTER MAINTENANCE FACILITIES

● EXISTING SURVEY SITE
○ SURVEY PERIMETER REFERENCE FLAG
TPB TRUE POINT OF BEGINNING MONUMENT

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AREA SURVEYED AT ODD AND EVEN CLUSTER MAINTENANCE FACILITIES

FIGURE 3-4

between 500 feet (150 m) and 1200 feet (360 m) to the west and marked with survey stakes.

3.1.3 Data Recording

Locational and environmental data were systematically recorded for each sample unit area (HSS, CMF, and RSS) on Sample Unit Record forms. These forms were designed by Air Force cultural resource consultants for the entire MX project so that directly comparable information could be collected for the overall archeological research project. Archeological sites were recorded on the Utah Antiquities Site Form. These forms were only slightly modified to accommodate the specific requirements of the IOC field survey. Field crews received both pre-field and in-field training in proper recording procedures. Field manuals giving detailed recording instructions were provided to each crew member. A few modifications in recording procedures made in the course of the field work were incorporated in the revised Field Manual. Copies of the sample unit and archeological site record forms are included in the Field Manual. Recording procedures are further described below.

Locational and environmental data collected for each survey area were compiled from the sample unit record forms and tabulated to facilitate comparative analysis. Appendix C contains locational information, map references, and cultural resources site types and temporary numbers for all survey units. Environmental characteristics for each survey area are summarized in Appendix F.

a. Sample Unit Record Forms. The sample unit record forms were slightly modified to accommodate the different sizes of sample units and potential mitigation requirements. The Sites and Vegetation and Landform Maps (page 5/5 of the sample unit form) were redrawn to represent the various dimensions of the HSS, CMF, and RSS sample units.

In the field, archeologists recorded vegetation according to a list of vegetation types that was used in previous MX surveys. Because the vegetation in Dry Lake Valley is more diverse than the list of selections available on the form, vegetation was further defined by listing each species in order of conspicuousness. These vegetation data were compared to those collected by the Ertec Northwest field biologists. Their analysis indicates that eleven dominant species communities occur in Dry Lake Valley; however, five of these are not listed as choices on the sample unit form. They are: Mormon tea (*Ephedra nevadensis*), galetta grass (*Hilaria jamesii*), snakeweed (*Gutierrezia microcephala*), spiny hopsage (*Grayia spinosa*) and four-wing saltbrush (*Atriplex canescens*). Further descriptions of the vegetation characteristics of sample units incorporate the analysis by the Ertec Northwest biologists, presented in Volume II, Part I of this report.

A detailed landform map was added to the sample unit form to facilitate recording cultural materials along survey transects and in relation to the cadastral survey monuments. Washes and outcrops were also indicated on these forms. The compass bearing of the centerline of each unit was recorded on each

landform map and later compared to a computer printout of coordinates and bearings for all survey areas to check unit locations and orient the survey areas on the ground. A contour map based on the 1:9600 field maps was then overlaid on the form. Consequently, cultural materials were easily and accurately plotted on the maps representing the survey areas. Vegetation and wildlife recorded by the field biologists on similar forms were thus made directly comparable.

A black-and-white verification photograph was taken from the southwest corner of each survey area. The biological field crew took a duplicate color photo for each unit.

b. Road Inventory Procedures: Sample unit forms were not used to record locational and environmental information on the DTN and Cluster 2 roads survey because the forms had not been designed for road surveys, and the data would not fit into the computerized files of the MX research design. The vegetation associations, landform, and depositional environments found along the road corridors were entered in field notes and then roughly plotted on 1:9600 field maps, using surveyors' stakes as references. These data were not compiled for comparative purposes because discrete inventory units had not been segregated before the survey. Further discussion of the road survey in relation to environmental variables and archeological site locations is provided in the summary analysis of recorded sites (Section 3.2.1).

c. Archeological Recording Procedures: All cultural materials

older than 50 years, including isolated artifacts, were recorded on the standard Utah State Antiquities Site Form. Black-and-white photographs were taken of all archeological sites. Supplementary color photographs were taken of all large archeological sites, temporally diagnostic artifacts, and some representative isolated artifacts. In addition, drawings were made of all isolated artifacts, projectile points, and certain other artifacts such as groundstone and bifaces. A sketch map was drawn for each site to represent it within the survey unit area, and each site was plotted on U.S.G.S. 7.5 minute maps, a copy of which was then appended to each site form. Supplementary information on prehistoric lithic assemblages was incorporated into the artifact description on the Utah Antiquities Site Form. This included an identification of biface and flake types and a description of lithic material type.[1]

d. <u>The MX Numbering System</u>: Temporary archeological field numbers were assigned following those developed for the MX project. These were slightly modified to accommodate the IOC project. The standard MX site designation has two basic parts. The first is the designation for the sample unit in which the site was found. Each sample unit designation has three fields, separated by dashes. All sample unit designations begin with the prefix "MX," followed by a U.S.G.S. number for the specific

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[1] The biface and flake typology was developed by Richard Hanes, Nevada State BLM Archeologist; a copy of the typology is included in Section 3.2.2.2.

watershed in which the sample unit is found. The watershed number is followed by a number assigned to the shelter sites, cluster maintenance facilities, or remote surveillance sites. For example, MX-181-2/23 refers to Shelter 23 in Cluster 2 (2/23) in Dry Lake Valley (181). Cluster maintenance facilities are also indexed by letter abbreviation (CMF) and cluster number (2): MX-181-CMF/2. Remote surveillance sites are referenced by letter abbreviation and sequential number designation on the 1:9600 field maps: MX-181-RSS/4.

The second part of the site designation is an H, P, or M, depending on whether the site is historic, prehistoric, or contains elements of both, coupled with a sequential integer. For example, the first prehistoric site recorded in Shelter 23 of Cluster 2 would receive the designation MX-181-2/23-P1.

Sites located entirely outside the sample unit boundaries were referenced to the nearest sample unit, and received the designation "(off)" immediately following the sample unit number. Sites found on a sample unit that extended beyond the sample unit boundaries were not assigned the designation "off".

Archeological sites discovered along the proposed road right-of-way were assigned temporary numbers based on the general MX system described above but modified to accommodate the separate crews working simultaneously along the road network. Sites recorded along the Designated Transmission Network were referenced with the letter abbreviation DTN, the initials of the

crew leader, and an integer from 1 to N, where N is the number of sites recorded by that crew. For example, MX-181-DTN-EB3 was the third site recorded by Elizabeth Budy's crew along the DTN. For the Cluster 2 road network, field numbers were assigned a Cluster 2 road designation (C2/road) and a sequential reference number: MX-181-C2/road-P1.

3.1.4 Determination of Significance and Criteria for Avoidance Mitigation

All sites recorded in the IOC field survey of Dry Lake Valley were evaluated according to the Site Significance Criteria list provided by the Bureau of Land Management (Hanes, 1980), to determine which sites would require avoidance mitigation. Determination of significance should not be confused with National Register potential. The criteria list merely reflects a guiding agreement between the Air Force and the BLM regarding the protection of cultural resources from potential direct MX construction impacts. These criteria provided the means by which determinations could be made in the course of the survey of those archeological sites requiring movement of proposed construction areas. This procedure is as yet experimental and its use as an overall mitigation measure is still under discussion. The list of criteria for avoidance mitigation is provided in Table 3-1.

3.1.5 Collection Policy and Curation

No systematic collection of cultural resources was implemented in the course of the Dry Lake Valley IOC field survey. Only

Prehistoric

1. Sites exhibiting a high likelihood of depth (e.g., dune sites, sites located on alluvial fans exhibiting high densities of chipped stone artifacts or hearth features.
2. Isolated features which demonstrate a possibility of depth (e.g., caches partially exposed by deflation).
3. Rockshelters immediately exposed to project location.
4. Rock art sites.
5. Large lithic scatters containing temporally diagnostic artifacts or artifacts indicative of specific cultural affiliations, multicomponent sites, or sites composed of discrete multiple activity areas.
6. Burial sites.
7. Rock alignments and cairns.

Historic

1. Structures greater than 50 years of age (e.g., ranches, ore mills).
2. Multicomponent or multiple activity sites (e.g., mining camps or towns).
3. Mining developments (e.g., shafts, adits).
4. Cemeteries.
5. Road or trail traces of early transportation routes.

In addition to the above prehistoric and historic site type listings, unusual or enigmatic anomalies should also be included.

Source: Richard Hanes, Nevada BLM State Archeologist

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ARCHEOLOGICAL SITE SIGNIFICANCE CRITERIA LIST

TABLE 3-1

certain temporally diagnostic artifacts were collected according to established BLM guidelines. These guidelines were modified during the course of field work. Initially only isolated, culturally or temporally diagnostic artifacts could be collected (See Appendix I). Subsequently, the policy was modified to allow discretionary collection of diagnostic artifacts from larger archeological sites. The change in policy occurred after much of the survey had been completed, hence few artifacts were collected. Descriptions and illustrations of collected artifacts are provided in Section 3-2 of this report. Collected artifacts will be curated by the Museum of Natural History, University of Nevada at Las Vegas and the Nevada State Museum, Carson City.

3.2 RESULTS

The following sections discuss the results of the Dry Lake IOC cultural resources survey. Section 3.2.1 presents information on the acreages of the inventoried areas. In section 3.2.2 data on all of the recorded sites are presented by site type. The statistical analysis of these data and a discussion of the relationship between the inventoried areas and recorded sites is presented in Section 3.2.3.

3.2.1 Inventoried Areas

A total of 4743.3 acres (1920 ha) were inventoried in Dry Lake Valley. This includes the original sample unit areas as well as the relocated sample unit areas and the DTN and Cluster 2 Roads. The breakdown of total areas by BLM districts is shown in Table 3-2.

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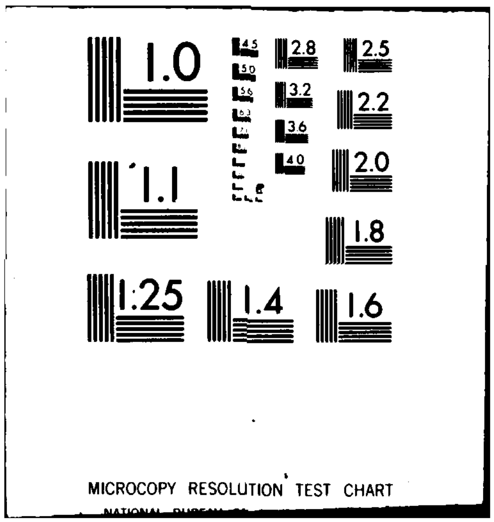
FIELD SURVEYS, IOC VALLEYS. VOLUME III, PART I. CULTURAL RESOUR--ETC(U)
AUG 81   F04704-80-C-0006

UNCLASSIFIED   E-TR-48-3-1   NL


1.0
1.1
1.25
1.4
1.6
1.8
2.0
2.2
2.5
2.8
3.2
3.6
4.0
MICROCOPY RESOLUTION TEST CHART

Survey Units	Las Vegas District		Ely District		Total	
	Acres	Hectares	Acres	Hectares	Acres	Hectares
HSS(230), RSS(5), CMF(10)	1,624.6	657.4	1,424.7	576.6	3,049.3	1,234.0
Resurveyed Units (34)	183.4	74.2	45.6	18.4	229.0	92.6
Original and relocated Roads (71.5 miles)	1,083.0	438.0	382.0	155.0	1,465.0	593.0
Total	2,891.0	1,169.6	1,852.3	750.0	4,743.3	1,919.6

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SURVEY AREAS ON BLM DISTRICT LANDS

TABLE 3-2

3.2.1.1 Sample Unit Areas

A total of 230 shelter sites, five remote surveillance sites, and ten cluster maintenance facilities were originally surveyed. Portions of 34 additional units (33 shelter sites and one CMF) were also surveyed after the original units had been relocated for geotechnical or engineering reasons or to avoid sensitive archeological or biological resources; however, only 23 of these units were actually relocated and incorporated into the final layout drawings. The relocated units were often moved to within a few hundred feet of the original unit; hence, the survey areas frequently overlapped and only small areas required additional surveys. The resurveyed and relocated units are listed in Table 3-3 where additional survey acreage and reasons for relocating units are indicated. Those units resurveyed but not relocated are listed separately in the same table.

Ninety-one sample unit areas out of 279 (including the relocated units) contained one or more cultural resources; however, one large site was recorded in six different sample unit areas. A total of 96 discrete sites were recorded in these inventory areas. This figure indicates that more than one site was rarely recorded in the same sample unit. This is probably to be expected given the small size of the survey areas (<19.6 acres). The locations of archeological sites in relation to survey sample unit areas are shown in Figure 3-5. Site types are defined in Section 3.2.2.2.

Archeological site frequencies in relation to sample unit areas are considered at the end of this section.

Sample Unit Number	Survey Area (acres)	Resurvey Rationale
AREAS RELOCATED		
MX-181-2/6A	3.7	Survey adjustment
MX-181-2/9A	3.7	Survey adjustment
MX-181-2/22A	12.4	Geotechnical-fault
MX-181-2/23A	9.3	Geotechnical-wash
MX-181-3/1A	12.4	Siting criteria violations
MX-181-3/5A	12.4	Sensitive archeology
MX-181-4/1A	12.4	Geotechnical-earth cracks
MX-181-4/2A	12.4	Sensitive archeology
MX-181-4/3A	11.1	Sensitive archeology
MX-181-4/4A	5.9	Siting criteria violations
MX-181-4/22A	11.8	Geotechnical-earth cracks
MX-181-5/5A	12.4	Siting criteria violations
MX-181-5/9A	3.7	Geotechnical-wash
MX-181-5/12A	1.9	Geotechnical-wash
MX-181-5/19A	9.9	Geotechnical-wash
MX-181-5/20A	5.3	Geotechnical-wash
MX-181-5/22A	3.1	Geotechnical-wash
MX-181-6/1C	12.4	Geotechnical-wash
MX-181-6/2A	12.4	Siting criteria violations
MX-181-6/18A	3.8	Geotechnical-shallow rock
MX-181-8/18A	9.6	Geotechnical-wash
MX-181-8/21A	2.3	Geotechnical-wash
MX-181-10/12A	1.9	Geotechnical-wash
AREAS NOT RELOCATED		
MX-181-1/3A	2.3	Sensitive biology[1]
MX-181-3/14A	3.7	Sensitive biology[1]
MX-181-5/18A	0.9	Sensitive biology[1]
MX-181-6/1A	3.3	Sensitive biology[1]
MX-181-6/1B	4.9	Sensitive biology[1]
MX-181-6/14A	3.7	Sensitive biology[1]
MX-181-8/19A	5.6	Sensitive biology[1]
MX-181-8/22A	2.8	Sensitive biology[1]
MX-181-9/23A	5.6	Sensitive biology[1]
MX-181-10/16A	3.7	Sensitive biology[1]
MX-181-CMF/8A	6.7	Sensitive biology[1]

(1) These units were considered for relocation for biological reasons, and were resurveyed. However, the units were not relocated.

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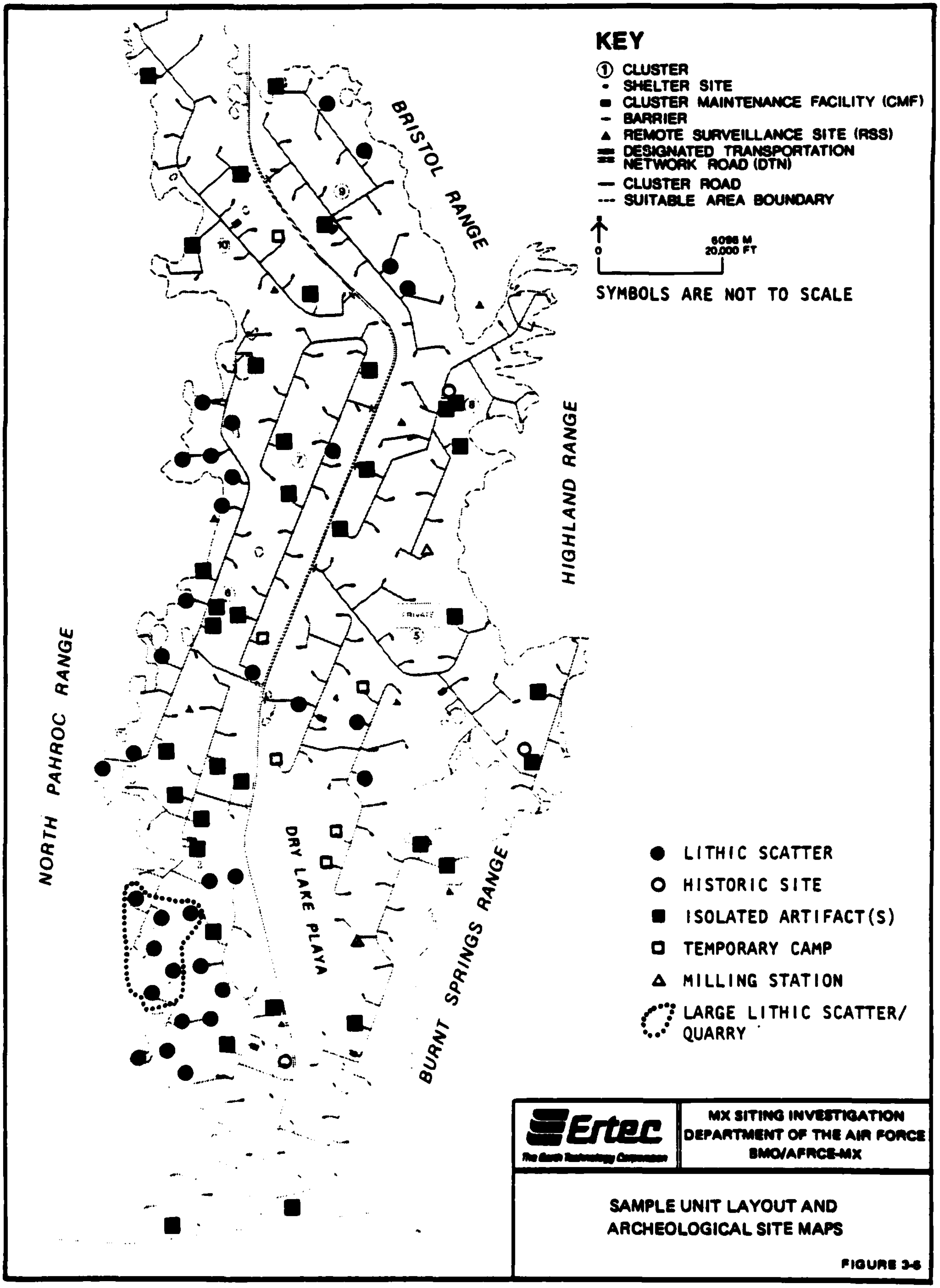
RESURVEYED AREAS

TABLE 3-3



SAMPLE UNIT LAYOUT AND ARCHEOLOGICAL SITE MAPS

FIGURE 3-6

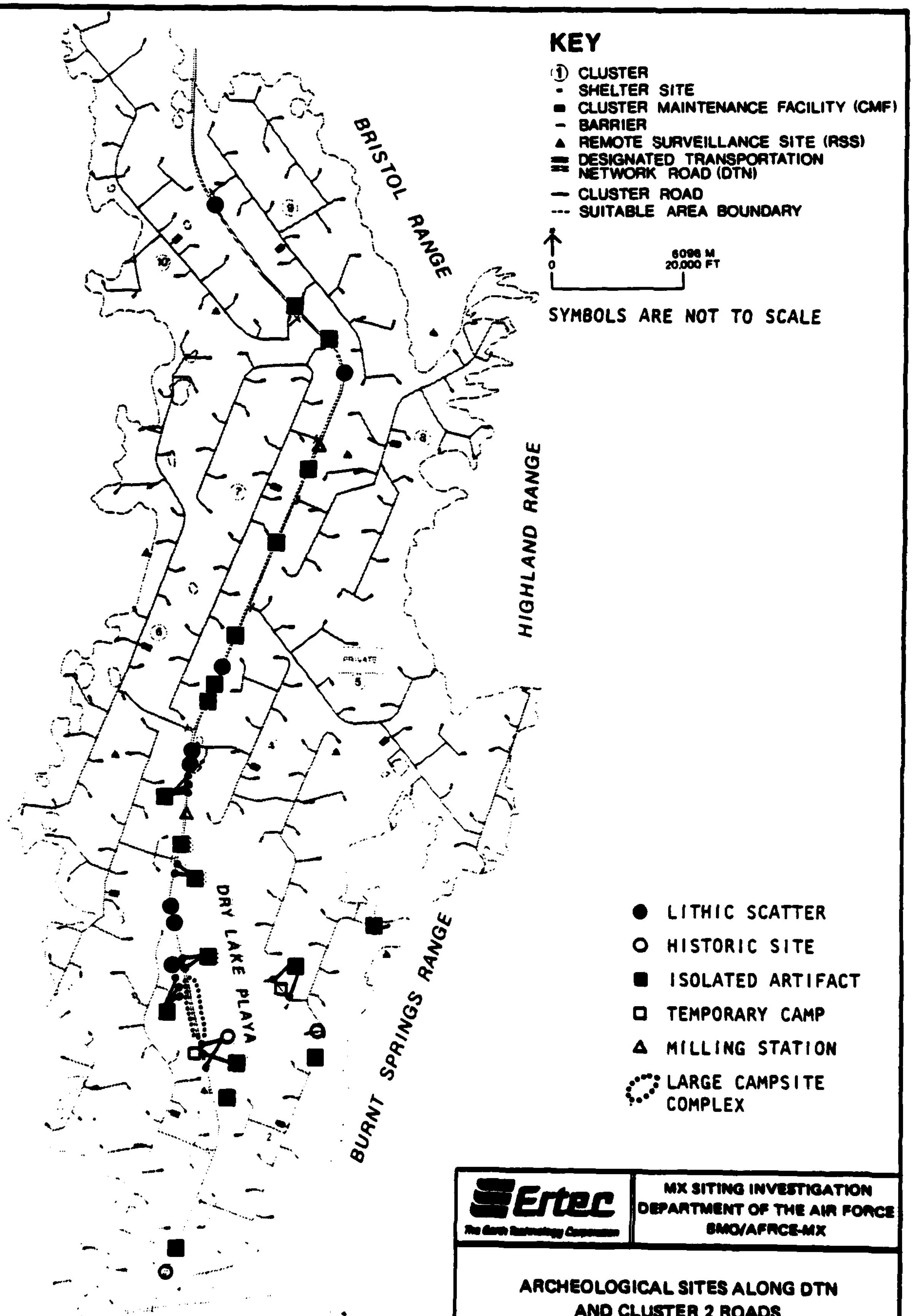
3.2.1.2 Road Survey

A total of 71.5 miles (114 km) of roads were inventoried for cultural resources. Additional survey transects were also conducted along 5.5 miles (9 km) of the DTN road in order to define the western boundaries of the large temporary campsite complex (MX-181-DTN-EB9) along the playa margin. The specific survey methods used to define these boundaries are explained in Section 3.1.2. This represents a total road survey area of 1465.0 acres (593 ha). The number of miles surveyed for each type of road is shown below.

Road Type	Miles	Kilometers
Cluster 2 Roads	27.1	43.6
Relocated Cluster 2 Roads	0.04	0.06
DTN Road	38.9	62.6
Relocated DTN Road	5.5	8.8
Total	71.54	115.06

A total of 43 archeological sites were recorded along the roads surveyed, 36 along the DTN and 7 along the Cluster 2 roads. The layout of the road networks and the location of archeological sites is shown in Figure 3-6.

The road inventory was conducted on only a portion of the total network proposed for Dry Lake Valley as an experiment to facilitate planning for future archeological investigations of roadways in MX construction valleys. Consequently, sampling



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ARCHEOLOGICAL SITES ALONG DTN AND CLUSTER 2 ROADS

FIGURE 3-6

strata were not identified in advance and roadway inventory areas are not directly comparable to sample unit areas. Archeological site information, however, was systematically collected for all survey areas and is therefore directly comparable.

3.2.2 Recorded Sites

A total of 139 discrete archeological sites were recorded in Dry Lake Valley: 131 prehistoric, 7 historic, and 1 multicomponent. Both the prehistoric and historic sites are described below. Specific site assemblage characteristics have been tabulated for each site type to facilitate intra- and inter-site comparison and to provide an efficient summary display of the large amount of archeological site data.

3.2.2.1 Historic Sites

The seven historic sites recorded in Dry Lake Valley include three isolated artifacts, one campsite, and three section corner mounds. Site MX-181-1/8(off)-M1 also contains a historic trail and campsite component. These sites are summarized in Table 3-4.

The section corner mounds date from the early 1882 government cadastral survey (G.L.O. Plat, 1882). The historic campsite, MX-181-5/19-H1, contains a variety of post-1920 tin cans, bottle glass, and a section of metal irrigation pipe. These materials suggest that the site relates to post-1920 ranching activities in the valley; however, the site also contains a

Temporary No.	Description	Date
MX-181-1/14-H1	cadastral survey 1/4 section rock mound	1882
MX-181-DTN-AM-H1	cadastral survey 1/4 section rock mound	1882
MX-181-8/14-H1	cadastral survey 1/4 section rock mound	1882
MX-181-5/19-H1	campsite	post-1920
MX-181-1/8(off)-M1	campsite/trail	1865
MX-181-C2/Road-H1	isolated hole-in-the-top can	pre-1900
MX-181-DTN-AM-H2	isolated cowbell	post-1920?
MX-181-DTN-AM-H3	isolated whiskey bottle	pre-1900

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DESCRIPTION OF HISTORIC SITES

TABLE 3-4

wagon tongue with square nails which is mended with bailing wire. The site is located close to the earliest trail in the valley which was established in 1865 by miners traveling to the Pahranagat district (Section 2.2.4.1). The wagon tongue might reflect early movement across the valley or it may simply reflect the continuity of ranching over time: that is, the use of the same camp area and the same old equipment.

The historic component of MX-181-1/8(off)-M1, on the other hand, seems to clearly reflect the earlier period. The 1865 miners' trail to Pahroc Springs passed through the site area (Section 2.2.4.1). The bottle glass and metal debris probably reflect a stopover along this early trail. The isolated can, cowbell, and whiskey bottle are probably related to turn-of-the-century ranching in the valley.

3.2.2.2 Prehistoric Sites

a. Site Typology

Sites are defined by the presence of one or more prehistoric artifacts. The typology used to describe the prehistoric sites discovered during the Dry Lake IOC cultural resources survey includes isolated artifacts, lithic scatters, milling stations, and temporary camps. Isolated artifacts are defined as the occurrence of a single artifact that is located at least 100 meters from another artifact or site.[1] Lithic scatters are

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[1] This definition of isolated artifacts was arrived at through conversations with Richard Hanes, BLM Nevada State Archeologist.

defined by the presence of two or more tools, flakes, or other reduction byproducts within 100 meters of each other. In addition to this, four subtypes of lithic scatters are described below. Milling stations consist of artifacts or features indicative of milling activities such as groundstone manos and metates. Temporary camps are defined by the presence of some combination of flaked stone artifacts, groundstone, fire cracked rocks, or ceramics which indicate limited subsistence and maintenance activities. This typology is based on one used during the MX regional sampling survey but was modified somewhat following discussions with Dr. Richard Hanes, BLM Nevada State Archeologist.

The MX regional research design (Fowler et al., 1980) views archeological sites as parts of a regional subsistence system. Principal site types described include: residential bases, field camps, and locations. A "residential base" is a habitation site from which other activities, such as resource procurement, were based. Evidence of resource processing and maintenance tasks are used to identify residential bases. From a residential base, task groups might go out to gather specific resources and make a temporary "field camp" while away from the residential base. Evidence of limited camping and the processing of a single resource are used to identify field camps. The place where a resource is procured is a "location." Evidence

of minimal processing is used to identify a location, although many have few or no archeological remains. These site types are integrated into a regional framework that describes the subsistence-settlement of a given area.

b. Site Summary

A total of 131 prehistoric sites were recorded; they are listed below.

Site Type	Number
Isolated artifacts	74
Lithic scatters	42
Milling stations	4
Small temporary camps	10
Temporary campsite complex	1
Total	131

The multicomponent site is not included in the above summary, but its prehistoric component is considered at the end of this section. The site types listed above are divided into additional typological categories in the discussion provided for each.

b. Isolated Artifacts: A total of 74 isolated artifacts were recorded. Their general distribution is provided in Figures 3-5 and 3-6 above. The types of isolated artifacts recorded are listed below.

Artifact Type	Number
Projectile Points	2
Pottery	1
Bifaces/Cores	14
Flakes	57
TOTAL	74

Isolated metate fragments were recorded as milling stations and are discussed in a later section.

Projectile Points and Pottery: Two isolated projectile points were recorded including a fragment of an Elko-Eared(?) white chert projectile point and a fragment of a yellow chalcedonous chert Elko Corner-notched point. A more detailed discussion of these diagnostic artifacts is provided in Section 3.2.2.3.

One isolated potsherd was recorded. It was identified as Snake Valley Black on Gray on the basis of temper and firing characterists.

Bifaces/Cores and Flakes: Most of the isolated artifacts recorded are lithic reduction waste products or non-distinctive flake tools. Table 3-5 presents the lithic artifact typology which was used to systematize lithic descriptions. Table 3-6 describes the recorded artifacts, and Table 3-7 presents summary information on them.

I. Cores and Bifaces

Type A. Angular thick specimens with large, frequently irregular, flake removals that produce uneven shapes, sections and edges; shape categories are difficult to define due to unevenness of morphological parameters.

Type B. Roughly shaped by percussion thinning; edges and outlines are irregular, but section is moderately regular; outline symmetry is noticeable. Other descriptive terms defining shape should be used, such as polyhedral, tortoise, pyramidal, etc.

Type C. Moderately regular in outline and section but edges still comparatively ragged and sinuous. This type is equivalent to a "blank."

Type D. Section and edge even in outline, but usually lacks hafting modifications and edges not systematically pressure trimmed.

Type E. Even outlines, regular sections, and pressure or fine percussion edge finishing. Hafting modifications absent or unfinished.

II. Flake Categories

A. Shatter (miscellaneous manufacturing by-products) - featureless chips, angular splinters, amorphous chunks.

B. Broken flakes - flake fragments missing the bulbs of force and striking platforms.

C. Decortification flakes - dorsal surface entirely or partly covered by cortex.

D. Interior percussion flakes - struck core-interior or bifacial blanks, relatively large in size with prominent bulbs of force and (frequently) plain simple platform surfaces.

E. Biface thinning flakes - commonly exhibit multifaceted striking platform edge; thin in cross-section and broad in outline.

F. Pressure flakes - relatively small with minute acuminate bulbs of force, thin cross-sections, and symmetrical outlines.

Source: Richard Hanes, BLM Nevada State Archeologist.

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LITHIC ARTIFACT TYPOLOGY

TABLE 3-6

Temporary No.	Material Type	Material Color	Artifact Type[1]	Edge Modification
MX-181-1/1-P1	Chert	Brown	IIB	+
MX-181-1/13-P1	Chert	Grey	IIE	+
MX-181-1/15-P1	Chert	Yellow	IID	+
MX-181-1/15-P2	Chert	White	IIB	-
MX-181-1/16-P1	Obsidian	Translucent	IIB	-
MX-181-1/16-P2	Chert	Brown/Yellow	IIE	+
MX-181-1/20-P1	Chert	Brown	IIE	-
MX-181-1/20-P2	Chert	Brown	IIE	+
MX-181-2/2-P1	Chert	Blue-Grey	IIE	-
MX-181-2/13-P1	Obsidian	Grey/Black?	IIE	-
MX-181-2/22A(off)-P1	Quartzite	Pink	IIB	+
MX-181-2/23A-P1	Chert	Brown	IID	-
MX-181-2/23A-P2	Obsidian	Grey/Black	IA	-
MX-181-3/12-P1	Chert	Brown	IIB	-
MX-181-3/12-P2	Obsidian	Grey/Black	IID	+
MX-181-3/15-P1	Tachylite	Black	IIB	+
MX-181-3/19-P1	Chert	White	IIE	-
MX-181-3/20-P1	Chert	Brown	IIA	+
MX-181-5/19A-P1	Chert	Gold	IIE	-
MX-181-5/21-P1	Quartzite	Tan	IIE	-
MX-181-6/3-P1	Obsidian	Grey/Black	IA	-
MX-181-6/3-P2	Obsidian	Grey/Black	IIB	-

[1]Table 3-8 provides the key to lithic artifact typology.
[2]Edge Modification: + Present - Absent

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DESCRIPTION OF ISOLATED LITHICS

Temporary No.	Material Type	Material Color	Artifact Type	Edge Modification
MX-181-6/9-P1	Chert	Yellow	IIC	-
MX-181-6/11-P1	Obsidian	Black	IIB	-
MX-181-6/14A-P1	Chert	Yellow/White	IID	+
MX-181-6/21-P1	Chert	Yellow	IIC	+
MX-181-7/3-P1	Quartzite	Yellow	IIE	+
MX-181-7/8-P1	Chert	Orange	IIB	-
MX-181-7/14-P1	Chert	Gold	IIE	-
MX-181-7/22(off)-P1	Quartzite	Pink/White	IA	-
MX-181-8/11-P1	Quartzite	Red	ID	+
MX-181-8/12-P1	Tachylite	Black	IIE	+
MX-181-8/12(off)-P1	Quartzite	Pink/Grey	IA	-
MX-181-8/12(off)-P2	Tachylite	Black	IIE	-
MX-181-8/14-P1	Chert	Red/Brown	IIC	-
MX-181-9/5-P1	Chert	Grey	IID	+
MX-181-9/6-P1	Quartzite	Red/Brown	IA	-
MX-181-9/14-P1	Chert	--	IA	-
MX-181-10/2(off)-P1	Chert	Grey	IID	+
MX-181-10/9-P1	Quartzite	White	IIB	-
MX-181-10/12-P1	Chert	Grey/Brown	IA	-
MX-181-10/19-P1	Chert	Pink	IIC	-
MX-181-6/CMF-P1	Chert	--	IID	-
MX-181-6/CMF-P2	Chert	Gold/Brown	IIB	+

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DESCRIPTION OF ISOLATED LITHICS

 TABLE 3-6

Temporary No.	Material Type	Material Color	Artifact Type	Edge Modification
MX-181-8A/CMF-P1	Chert	Red/Gold	IB	-
MX-181-9/CMF-P1	Chert	Red	IIC	+
MX-181-9/CMF-P2	Chert	Red/Brown	IA	-
MX-181-DTN-JG5	Chert	Orange/Black	IID	-
MX-181-DTN-JG6	Chert	Black	IIB	-
MX-181-DTN-EB4	Chert	Yellow	IIE	-
MX-181-DTN-EB5	Chert	Yellow	IIB	+
MX-181-DTN-EB7	Chert	Grey	IIE	+
MX-181-DTN-EB8	Chert	Black	IIE	-
MX-181-DTN-EB10	Quartzite	Yellow	IIC	-
MX-181-DTN-EB12	Chert	Black	IB	+
MX-181-DTN-AM1	Obsidian	Grey	IIE	-
MX-181-DTN-AM2	Chert	White/Pink	IIE	-
MX-181-DTN-AM3	Chert	Black	ID	-
MX-181-DTN-AM5	Chert	Yellow	IIC	-
MX-181-DTN-AM6	Chert	Black	IIE	-
MX-181-DTN-AM9	Chert	Orange	IIE	+
MX-181-DTN-AM10	Chert	Pink	IIE	-
MX-181-DTN-AM11	Chert	White	IIA	-
MX-181-DTN-AM13	Chert	Black/Orange	IIB	-
MX-181-DTN-AM14	Chert	Gold	IIE	-
MX-181-DTN-AM15	Chert	White	IIC	-

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DESCRIPTION OF ISOLATED LITHICS

 TABLE 3-6

Temporary No.	Material Type	Material Color	Artifact Type	Edge Modification
MX-181-C2/Road-P1	Chert	Brown/White	IIE	-
MX-181-C2/Road-P2	Chert	Gold	IID	+
MX-181-C2/Road-P4	Chert	Red	IA	-
MX-181-C2/Road-P5	Chalcedony	White	IIC	-
MX-181-C2/Road-P6	Obsidian	Grey/Black	IA	-

DESCRIPTION OF ISOLATED LITHICS

Subtype[1]	Number	Percentage
Bifaces/Cores		
Angular thick specimens with large irregular flake removals (IA)	10	72
Roughly shaped by percussion thinning (IB)	2	14
Even outlines, not systematically pressure trimmed (ID)	2	14
	14	100
Flakes		
Shatter (IIA)	2	3
Broken Flakes (IIB)	14	25
Cortex Flakes (IIC)	9	16
Interior Percussion Struck Flakes (IID)	9	16
Biface Thinning Flakes (IIE)	23	40
	57	100

[1] Table 3-8 provides the key to the lithic artifact typology.

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BIFACES/CORES AND FLAKE SUBTYPES

TABLE 3-7

Fourteen (19 percent) of the isolated lithics are either bifaces or cores. Of these, ten are thick, angular specimens with irregular flake removals (Type IA) and probably represent discarded cores. The remaining four were at intermediate stages of tool reduction. Fifty-seven (78 percent) of the isolated lithics are flakes. Utilization or retouching is indicated for 40 percent of these flakes.

The most common material type is chert with lesser amounts of obsidian and tachylite, chalcedony, and quartzite. This distribution of materials probably reflects the local availability of raw materials in Dry Lake Valley which is discussed below.

c. Lithic Scatters: Two subtypes of lithic scatters are recognized: quarries and chipping circles. Quarries consist primarily of unmodified reduction waste products, including shatter and flakes. They also contain some cores and thick, angular bifaces and a few flake tools, thin bifaces, and projectile points. Chipping circles consist simply of the byproducts from the reduction of a single specimen, whether or not that specimen is present. Where these subtypes could not be identified, lithic scatters were designated as small, ($50 m^2$ or less), or large, (greater than $50\ m^2$). A total of 42 separate lithic scatters were recorded, 31 in the shelter units, 2 in the CMFs, and 9 along the DTN. All lithic scatters recorded in Dry Lake Valley except quarries and chipping circles, are low density. The subtypes of lithic scatters are shown below and Table 3-8 summarizes their characteristics.

Temporary Site No.	Size	Average(1) Density	% Bifaces(2)	% Shatter/ % Unmodified Flakes	Edge Modified	Total(3) Count	Chert	Obsidian(4)	Basalt	Quartzite
Quarries										
MX-181-1/22, 3/5-3/9-P1	3.8km X 5.6km	1/10m^2	12% A, -1% D	72%	16%	263	100%	—	—	—
MX-181-3/1A-P1	1km X 1km	2/100m^2	20% A, 4% E*	76%	—	25	100%	—	—	—
MX-181-6/1-P1	500m X 800m	1/100m^2	9% A	82%	9%	11	100%	—	—	—
MX-181-6/19-P1	>200m X 250m	5/20m^2	-1% A, -1% C	95%	3%	111	100%	—	—	—
Chipping Circles										
MX-181-4/14-P1	10m X 10m	25/10m^2	—	100%	—	25	100%	—	—	—
MX-181-9/5-P2	10m X 25m	10/1m^2	—	92%	8%	25	100%	—	—	—
MX-181-9/19-P1	10m X 10m	3/1m^2	—	100%	—	10	—	100%	—	—
Small Lithic Scatters										
MX-181-4/9-P1	1m X 2m	1/2m^2	—	100%	—	2	50%	50%	—	—
MX-181-4/13-P2	1m X 5m	2/5m^2	—	100%	—	2	50%	50%	—	—
MX-181-9/16-P1	1m X 7m	2/7m^2	50% B	50%	—	2	50%	50%	—	—
MX-181-7/CMF-P1	1m X 36m	1/18m^2	—	100%	—	2	100%	—	—	—
MX-181-DTN-EB2	15m X 2m	2/30m^2	—	100%	—	2	100%	—	—	—
Large Lithic Scatters										
MX-181-1/9-P1	>200m X 250m	1/25m^2	—	70%	30%	13	100%	—	—	—
MX-181-1/18-P1	50m X 245m	1/30m^2	-4% A, -4% E*	74%	19%	27	99%			
-1% —	—									
MX-181-1/19-P1	10m X 150m	1/50m^2	—	80%	20%	5	100%	—	—	—
MX-181-1/23-P1	>200m X 250m	1/50m^2	30% A	20%	50%	10	70%	3%	5%	22%

(1) Average density was calculated from estimations based on actual total counts along transects.
(2) Projectile Points are included under Type IE bifaces. Bifaces are distinguished according to Hanes' typology IA-IE.
(3) Total counts upon which percentages are based were determined by counts made along the survey transects (at 25 meter intervals.
(4) Tachylite is included under obsidian since the two were not always distinguished.

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DESCRIPTION OF LITHIC SCATTER ASSEMBLAGES

TABLE 3-8

Temporary Site No.	Size	Average(1) Density	% Bifaces(2)	% Shatter/ % Unmodified Flakes	Edge Modified	Total(3) Count	Chert	Obsidian(4)	Basalt	Quartzite
MX-181-3/1-P1	75m X 150m	1/50m^2	28% A	43%	29%	7	100%	—	—	—
MX-181-3/2-P1	125m X 175m	1/50m^2	—	86%	14%	7	100%	—	—	—
MX-181-3/3-P1	50m X 50m	1/50m^2	80% A	—	20%	5	100%	—	—	—
MX-181-3/4-P1	75m X 175m	1/50m^2	17% A	83%	—	6	83%	17%	—	—
MX-181-3/11-P1	150m X 150m	1/75m^2	40% D	20%	40%	5	100%	—	—	—
MX-181-3/16-P1	75m X 250m	1/75m^2	23% A	77%	—	13	100%	—	—	—
MX-181-4/13-P1	25m X 25m	1/50m^2	—	100%	—	12	25%	25%	25%	25%
MX-181-6/2-P1	370m X 850m	1/20m^2	—	100%	—	30	100%	—	—	—
MX-181-6/6-P1	5m X 100m	1/100m^2	—	50%	50%	2	50%	—	—	50%
MX-181-6/10-P1	25m X 150m	1/100m^2	33% A	66%	—	3	66%	33%	—	—
MX-181-6/14-P1	75m X 100m	1/50m^2	11% A	67%	22%	9	89%	11%	—	—
MX-181-6/15-P1	100m X 250m	1/100m^2	10% E*	70%	20%	10	90%	10%	—	—
MX-181-6/16-P1	100m X 200m	1/100m^2	11% D	89%	—	9	56%	—	—	44%
MX-181-6/17-P1	203m X 240m	1/100m^2	17% A	50%	33%	6	100%	—	—	—
MX-181-6/18-P1	>200m X 500m	1/100m^2	—	100%	—	8	100%	—	—	—
MX-181-7/1-P1	30m X 30m	1/30m^2	5% E	75%	20%	20	20%	80%	—	—
MX-181-9/4-P1	50m X 125m	1/50m^2	18% D	82%	—	11	100%	—	—	—
MX-181-CMP/7-P2	20m X 20m	1/20m^2	—	100%	—	5.	60%	—	—	40%
MX-181-DTN-JG1	20m X 20m	1//200m^2	—	100%	—	2	100%	—	—	—
MX-181-DTN-JG2	25m X 25m	1/300m^2	—	100%	—	2	100%	—	—	—
MX-181-DTN-JG3	20m X 50m	1/100m^2	—	100%	—	10	80%	10%	—	10%
MX-181-DTN-EB1	45m X 45m	1/100m^2	—	80%	20%	5	100%	—	—	—
MX-181-DTN-EB6	20m X 45m	1/50m^2	—	100%	—	6	100%	—	—	—
MX-181-DTN-AM4	4m X 80m	1/10m^2	8% A	92%	—	12	100%	—	—	—
MX-181-DTN-AM7	12m X 38m	1/10m^2	8% A	83%	8%	12	92%	—	—	8%
MX-181-DTN-AM8	45m X 60m	1/100m^2	—	100%	—	8	100%	—	—	—

*Includes projectile point.

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DESCRIPTION OF LITHIC SCATTER ASSEMBLAGES

TABLE 3-8

Subtype	Number
Quarries	4
Chipping Circles	3
Small Lithic Scatters	5
Large Lithic Scatters	30
Total	42

Quarries

A total of four quarry sites were recorded; all extend beyond individual sample unit boundaries. A large site on the west side of Dry Lake Valley was recorded in seven areas on six sample units: MX-181-1/22, MX-181-3/5(off), and MX-181-3/5 through MX-181-3/9. These were originally recorded as separate sites and later grouped into one large site with separate sample unit loci. The outside boundaries of the site were estimated from the distributions of similar, continuous, artifact material on adjacent sample units. Other lithic scatters in the area with similar artifacts were not included in this large site when site boundaries were determined to be smaller than the sample unit area.

The boundaries of quarry sites MX-181-3/1A-P1 and MX-181-6/1-P1 were estimated, as were those described above, by observations of artifact distributions outside sample boundaries in the course of relocating shelter sites or walking to shelter sites. The distribution of materials on site MX-181-6/19-P1 was merely observed to extend beyond the sample unit area. Absolute limits of sites, however, were never determined. It is likely that all

of sites, however, were never determined. It is likely that all of these sites are scattered over a much larger area than has been estimated for each. However, given the very low density of materials present on these sites (from $1/10m^2$ to $1/100\ m^2$), exact boundaries might be difficult to establish.

Two very similar types of lithic material occur on the quarry sites. Both are of a crypto-crystalline quartz variety, probably chert. One type varies from yellow to gold to brown; the other is predominantly reddish-brown to very black. These cherts are available in the alluvial sediments on the upper fans and in the washes on the west side of Dry Lake Valley. They occur in cobble-sized or smaller forms and are generally very sparsely distributed.

A least one outcrop of the reddish-brown to black variety occurs in a limestone formation near Rattlesnake Spring in the west-central part of the valley in the vicinity of Cluster 6 (Brooks and Ferraro, 1978). Although periodic spot checks were made along the edge of the North Pahroc Range in the southwest part of the valley, no outcrops of the yellow-gold-brown variety were observed. Based on the sample unit survey in Cluster 3, the highest frequency of occurrence of the cobble-sized specimens seems to be concentrated on the fans below Mustang and Wheatgrass springs in the area between 5000 and 5040 feet (1524 - 1536 m) in elevation; however, materials are thinly distributed at least as low as 4850 feet (1478 m) in elevation.

The only lithic materials noted on the quarry sites were the locally available cherts described above. It is likely, therefore, that the heavy percentage of debitage on these sites reflects primary reduction of locally available chert cobbles to smaller specimens or merely the casual testing of stoneknappers. However, because similar cherts occur in outcrops near Rattlesnake Spring, some materials may also have been transported to the sites from this or similar outcrops.

Chipping Circles. A total of three chipping circles were recorded. The material at two of the sites is of local chert, while the third contains an imported obsidian. No diagnostic artifacts were recorded at any of the chipping circles.

Small Lithic Scatters. A total of five small lithic scatters were recorded; none contained diagnostic artifacts. This, combined with the small number of artifacts, precludes any inference about site function.

Large Lithic Scatters. A total of 30 large lithic scatters were recorded. Although artifact densities vary, most are very low, from 1/50 m^2 to 1/10m^2. Total artifact counts were also very low, with an average of less than 10 artifacts.

Lithic scatter assemblages closely resemble those of quarry sites with artifacts consisting primarily of unmodified lithic reduction waste products. Most of the sites contained shatter, all but one contained unmodified biface thinning flakes, and nearly half contained at least one core or thick, angular

biface. About half of the sites contained retouched or utilized flakes, although identifying retouch and utilization in the field is difficult, and other factors such as manufacturing techniques and weathering can affect flake edges.

Most of the sites occur on the western fans near the quarry sites (Figures 3-5 and 3-6 above). The most common artifact material is chert, but small amounts of obsidian, quartzite, and basalt were recorded. The cherts appeared to be predominantly local varieties, although some white and red chalcedonic materials were also noted.

Except for two projectile points, no distinctive tool types were noted at any of the large lithic scatters, making it difficult to infer resource gathering or processing activities. Based on the predominance of lithic reduction waste products, the location near quarries, and the low artifact densities, these lithic scatters probably reflect workshop activities which were not pursued very actively.

The temporal and cultural affiliation of these sites are not well established. Only two projectile points were observed, a Pinto series point and an Eastgate point. These points probably reflect utilization during middle Archaic and late prehistoric times (Heizer and Hester, 1978).

d. Milling Stations. Four milling stations were recorded, three of which consisted of a single isolated metate fragment. Table 3-9 summarizes the characteristics of the groundstone at these sites.

Temporary Site No.	Groundstone Type	Dimensions	Material	Surface Characteristics
MX-181-2/16-P1	metate fragment	14cm x 11cm x 2cm	rhyolite	shaped, polished, pecked
MX-181-8/4-P1	metate fragment	39cm x 22cm x 12cm	limestone	polished, striations
MX-181-DTN-AM12	metate fragment	11cm x 7cm x 2cm	basalt	polished
MX-181-DTN-EB3	3 fragments from 1 metate	25cm x 25cm x 8cm	basalt	pecked, polished, striations
MX-181-DTN-EB3	incipient mortar?	20cm x 14cm x 7cm	basalt	pecked
MX-181-DTN-EB3	hammerstone	15cm x 12cm x 10cm	basalt	battered tip

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DESCRIPTION OF GROUNDSTONE AT MILLING STATION SITES

TABLE 3-9

The metate fragments all represent portable, flat, tabular, or slab varieties. All of the groundstone materials on MX-181-DTN-EB3 were firecracked, and the incipient mortar, or anvil stone, and the hammerstone were the only complete specimens. Although the artifacts may have been purposely broken, the breakage probably results from the heavy grazing disturbance in the area.

These sites probably reflect the processing of hard seeds, probably grass seeds. All are located in flat, silty areas, characterized by shadscale or winterfat but containing small amounts of ricegrass; however, during periods of greater moisture, these areas may produce a variety of seed plants not visible during the late autumn survey.

e. Temporary Camps. Ten small temporary camps were recorded. Limited occupation is inferred from small site size and the low overall density of artifacts. A large complex of temporary camps along the playa margin, including milling stations, metate caches, rock alignments, and lithic scatters, was recorded as one site, MX-181-DTN-EB9. Another temporary camp, including petroglyphs, rock overhangs, and a historic component, was recorded as site MX-181-1/8(off)-M1. Each of these sites and site complexes is separately discussed below.

All of the temporary camps contain small numbers of widely spaced lithic artifacts in addition to either hearth features (fire-cracked rock), groundstone, or ceramics. Site dimensions and assemblage characteristics are summarized in Table 3-10.

	Size	Average Density	Ground-stone Metate	Mano	Hearth	Pottery	Shell	Bone	Biface(1)	Unmodified Flakes or Scatter	Edge Modified Flakes	Lithic Materials
MX-181-4/2 P2	8m x 8m	$10/30m^2$	-	-	+	30 sherds	-	-	-	-	2	obsidian
MX-181-4/3 P1	120 x 180	$5/5m^2$	5	-	+	-	1	-	12(D-E)	50	30	obsidian, tachylite, chert, quartzite basalt
MX-181-4/6 P1	75 x 150	$1/50m^2$	2	-	-	-	-	6	-	17	3	chert
MX-181-4/17 P1	50 x 125	$1/50m^2$	-	2	-	-	-	-	2E	5	-	chert
MX-181-7/2 P1	130 x 200	$1/50m^2$	1	-	-	-	-	-	-	15	5	chert, obsidian, quartzite
MX-181-8/1 P1	75 x 150	$1/50m^2$	-	-	+	-	-	-	1A	30	-	tachylite, chert
MX-181-8/7 P1	50 x 150 chert	$1/25m^2$	-	-	+	-	-	-	1E	6	1	obsidian, quartzite,
MX-181-10/8 P1	2/10	$1/10m^2$	-	1	+	-	-	-	-	-	1	obsidian
MX-181-DTN EB11	35 x 50	$1/50m^2$	1	-	+				1A	1	-	chert, quartzite
MX-181-C2/ Road P3	20 x 30	$1/2m^2$	1	-	-	-	-	-	-	15	-	chert, obsidian

(1) Projectile points are included under Type IE bifaces.

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DESCRIPTION OF TEMPORARY CAMPS

TABLE 3-10

Bone and shell fragments were noted on only two of the sites; however, organic materials are not likely to be preserved long on the ground surface. The six bone ring fragments recorded on MX-181-4/6-P1 were all smoothed and polished. These were not collected and were not subjected to further analysis; however, they probably reflect some sort of ornamental rather than food use. The small shell fragment is also enigmatic. It was highly polished but not drilled or distinctively shaped; whether the polish resulted from natural weathering or manufacture intent could not be determined.

All of the temporary campsites were heavily eroded or deflated. These sites were further disturbed by extensive cow trampling. Site MX-181-DTN-EB11 is located directly adjacent to a well-developed jeep trail and a fence line. A large metate fragment was located next to a gate post along the fence line and had obviously been removed from its original context. The ground-stone on all sites was fragmented. Hearth features were badly eroded and often scattered. Many of the lithics were broken. The disturbed condition of the sites probably explains the uneven distribution of material represented in Table 3-10.

All but two of the temporary campsites (MX-181-8/7-P1 and MX-181-10/8-P1) are located in dunes or sandy areas, usually adjacent to a major intermittent water source such as the playa or a major wash (see environmental summary, Appendix E). Ricegrass and other edible grass seed plants often proliferate

in these well-drained sandy areas (Munz and Keck, 1973). These small temporary camps may reflect the short term occupation of these resource gathering areas.

One site, MX-181-7/2-P1, is associated with an enigmatic geologic feature, resembling an extinct shoreline. Magnetometer tests in conjunction with a reevaluation of aerial photographs indicate that the feature is a fault. The fault displaces alluvial fans and possibly playa deposits, suggesting a Holocene age. The veneer of uplifted alluvial fan deposits is presently eroding away, leaving a soil type that apparently contains eroded tufa deposits not present elsewhere in the area. The association of archeological site MX-181-7/2-P1 is therefore probably only fortuitous, although the silty-sandy soil may have been conducive to seed plant growth.

Only one site (MX-181-4/2-P2) contained ceramics, consisting of thirty Snake Valley Gray sherds. The sherds, found clustered together in one small area near an eroded hearth, probably represent fragments from one pot. Two sites contained projectile points; however, only one contained a typologically distinctive specimen. A complete chalcedonic chert specimen, identified as an Elko Eared point, was recorded on MX-181-4/17-P1. Two obsidian projectile point tips recorded on MX-181-4/3-P1 were too incomplete for classification.

f. Temporary Campsite Complex

The significance of playa margin resources for the prehistoric occupants of Dry Lake Valley is clearly indicated in the complex of features reflecting milling activities and temporary camps recorded in the dunes on the west side of the playa along the proposed DTN. This complex of features recorded as MX-181-DTN-EB9 probably reflects a series of one-time activity areas or camp sites which were used at different times.

A thin lithic scatter was noted over most of the site area; however, distinct activity loci were separately recorded and mapped using compass bearings. These loci include milling stations, temporary camps, hearth features, workshops, and distinctive lithic tools. A total of 24 separate loci, located between 70 and 2000 feet (20 and 600 m) apart, were identified on the basis of distinctive artifacts or an unusual concentration of artifacts. A summary of loci and features is shown below, and Table 3-11 describes each locus.

Milling Stations	9
Metate Cache	1
Hearths	2
Temporary Camps	8
Lithic Scatters	3
Isolated Projectile Point	1
Total	24

Locus	Size	Type	
#1	25m x 25m	Milling Station	Two groundstone fragments (1 quartzite mano, 1 basalt metate); 2 unmodified chert flakes, 1 black chert Type IA biface.
#2	10m x 10m	Milling Station	Two groundstone fragments (1 metate, 1 mano - basalt); 1 broken chert biface (IB); 5 unmodified chert flakes (IIF).
#3	30m x 5m	Lithic Scatter	One utilized chert biface (IA), 1 unmodified obsidian flake (IID), 1 unmodified basalt flake (IIE).
#4	50m x 20m	Temporary Camp	Incipient mortar (or anvil rock) and mano of b.salt; fire-cracked rock, 1 unmodified broken chert flake (IIE), 1 unmodified broken basalt flake (IIE.)
#5	50m x 50m	Temporary Camp	Seven metate framents from four different material sources (3 basalt, 4 tuff?); scattered bits of fire-cracked rocks; 1 mano fragment, 5 unmodified broken chert flakes (IIE), 1 chert core (IA).
#6	35m x 20m	Milling Station	Two basalt metate fragments, 4 broken chert flakes (3 II E, 1 II A).
#7	-1m x -1m	Milling Station	Isolated metate fragment.
#8	50m x 50m	Temporary Camp	Seven basalt metate fragments, scattered fire-cracked rock, 1 chert core (IA).
#9	20m x 20m	Hearth	Scatter of fire-cracked rocks near a dune crest.

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DESCRIPTION OF LOCI RECORDED ON MX-181-DTN-EB9

TABLE 3-11

Locus	Size	Type	
#10	50m x 50m	Temporary Camp	One pink volcanic metate fragment; 1 basalt cobble-chopper (IA), unifacially utilized chert chopper (IA); 1 broken quartzite biface (IB).
#11	75m x 50m	Temporary Camp	One fragment Snake Valley gray ware pottery; scattered fire-cracked rock; 3 quartzite & 4 chert unmodified and broken flakes (IIE); 1 utilized chert flake (IIE).
#12	50m x 30m	Temporary Camp	Rock alignment (5 rocks), 1 chalcedony cobble/chopper (IA), 1 utilized obsidian flake (IIE), scattered fire-cracked rock.
#13	20m x 20m	Lithic	15 unmodified chert flakes (IIE), all broken.
#14	5m x 5m	Milling Station	Two groundstone fragments (1 basalt, 1 red metamorphic?); two imported unmodified limestone rocks; two fire-cracked rocks.
#15	5m x 5m	Milling Station	Two basalt metate fragments.
#16	.5m x .5m	Hearth	Hearth eroding out of dune crest. 19 small fire-cracked rocks with lots of charcoal.
#17	10m x 10m	Metate Cache	Five large metate fragments from 4 different materials (1 basalt, 1 rhyolite, 2 metamorphic) eroding out of side of dune. 10 broken chert flakes (IIE).
#18	1m x 20m	Temporary Camp	One volcanic mano fragment, scattered fire-cracked rock, 3 chert bifaces (1 midsection Type IC, 2 II B), 1 tachylite projectile point tip (IE), 9 unmodified chert flakes (IIE).

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DESCRIPTION OF LOCI RECORDED ON
MX-181-DTN-EB9

 TABLE 3-11

Locus	Size	Type	
#19	1m x 20m	Temporary Camp	Two metate fragments (basalt); scattered fire-cracked rock; 2 chert biface fragments (IA); 15 unmodified chert flakes IE); 1 Elko Eared projectile point.
#20	5m x 5m	Milling Station	metate fragment and chert core (IA).
#21	10m x 10m	Milling Station	metate fragment; ten broken chert flakes (IIE).
#22	5m x 5m	Lithic Scatter	One Rose Spring projectile point; 2 broken quartzite flakes (IIE), 1 unifacially retouched).
#23	----	Isolated Projectile Point	Tachylite Pinto series projectile point base.
#24	5m x 5m	Milling Station	Two metate fragments, 1 chert flake (IIE), 1 chert core (IA)

The milling stations and temporary camp loci at site MX-181-DTN-EB9 are somewhat arbitrarily segregated. Both types of loci contain groundstone and some lithics; however the temporary camps are distinguished by large size, the presence of fire-cracked rock or ceramics, and a greater variety of lithics. Because most loci areas are severely eroded and heavily disturbed by grazing, subsequent investigation may reveal that some of the milling stations are temporary camps.

The metate cache was further distinguished from the milling stations. Five large metate fragments were observed <u>in situ</u> eroding out of the side of a dune where they most likely had been buried. The metates were lying with the ground surface face down. Aboriginal populations in the Great Basin often cached for future use; turning them face down helped keep the ground surfaces clean (Fowler, 1980).

Locus #13 consisted of a concentration of 15 unmodified flakes in a dune blowout and may represent a small workshop site. An isolated Pinto series projectile point base fragment was recorded as Locus #19. Two hearths were recorded as Loci #9 and #16. Locus #16 is a well-preserved feature just beginning to erode out of the top of a low dune. It contains abundant charcoal that might yield a radiocarbon date. Further investigation of this feature including flotation might identify specific seed plants and other processed resources utilized by the prehistoric occupants of the site area. Locus # 9 consists

of a scatter of fire-cracked rocks in a dune blowout; it probably resulted from the combined effects of deflation, erosion, and cow trampling.

A small rock cluster was also recorded in association with a cobble-chopper, an obsidian flake, and four fire-cracked rocks at Locus #12. This feature consisted of three large basalt rocks, approximately 6 inches (15 cm) in diameter, with no apparent orientation, within a one meter square area, and two other rocks located 50 feet (15 m) away. The lithics and fire-cracked rocks were located within 82 feet (25 m) of the feature, but were not in direct association with it. The three large basalt rocks are located on the edge of a low dune while the two others were found in a flat deflated area nearby. It is likely that the feature is eroding out of the dune and being dispersed in the process. Further investigation may reveal additional components which could contribute to an understanding of this enigmatic rock alignment.

The large number of loci containing groundstone indicates that seeds were being processed at the site. The presence of fire-cracked rock or distinct hearth features at ten of the loci suggests at least temporary occupation of this area. The overall paucity of temporary occupation sites recorded elsewhere in Dry Lake Valley indicates the importance of playa margin resources. Although temporary camps have been recorded at some of the springs higher on the fans (Section 2.2.2.3) and in the

foothills of the surrounding ranges, 15 of the 20 distinct temporary camps (including the loci on MX-181-DTN-EB9) recorded on the IOC field survey were located on the playa margin.

The presence of this large site complex along the western edge of the playa indicates that playa margin resources were a significant factor determining the location of prehistoric settlements in Dry Lake Valley. The playa margin must have provided an environment favorable to prehistoric occupants of Dry Lake Valley, at least on a seasonal basis, that was generally lacking in Dry Lake Valley proper. Several major resources may be involved: water and grasses for human consumption, and mammals and migratory waterfowl attracted by water and associated flora.

The periodic flooding of the playa stimulates the proliferation of grasses, especially ricegrass, on the dunes and sandy shorelines. Ricegrass was an important aboriginal seed resource in the southern part of the Great Basin and considerable quantities were gathered in early summer for storage (Steward, 1938). The harvest period was limited to only a few weeks, and as a result, the duration of occupation was also restricted to this period of limited resource availability.

The periodic inundation of the playa in the spring also stimulates the growth of a wide variety of aquatic organisms attractive to migratory birds. However, there are no direct indications of the utilization of wild fowl in the recorded surface assemblages of the temporary camps. Further investigations may

clarify the specific nature of the playa margin resources. The temporal and cultural affiliations of the MX-181-DTN-EB9 site area are not well established; however, the few projectile points and potsherds indicate a potential range of occupation between middle Archaic and Sevier times (8000 B.P. - A.D. 1200). Only one sherd of Snake Valley Gray pottery was noted at the site. Three projectile points were recorded and collected: a Pinto base, a Rose Spring Corner Notched, and a broken Elko Eared. These are further described and illustrated below.

g. <u>MX-181-1/8(off)-M1</u>

Only one site with both an historic and a prehistoric component was recorded. MX-181-1/8(off)-M1 is unique among the inventoried sites in that it contains petroglyphs in addition to a temporary campsite. This site was not directly associated with any sample unit, but was encountered enroute to a survey area. Its potential significance for the under standing of the archeology of Dry Lake Valley and its high potential for destruction warranted its inclusion in the site inventory. The historic component was discussed in Section 3.2.2.1.

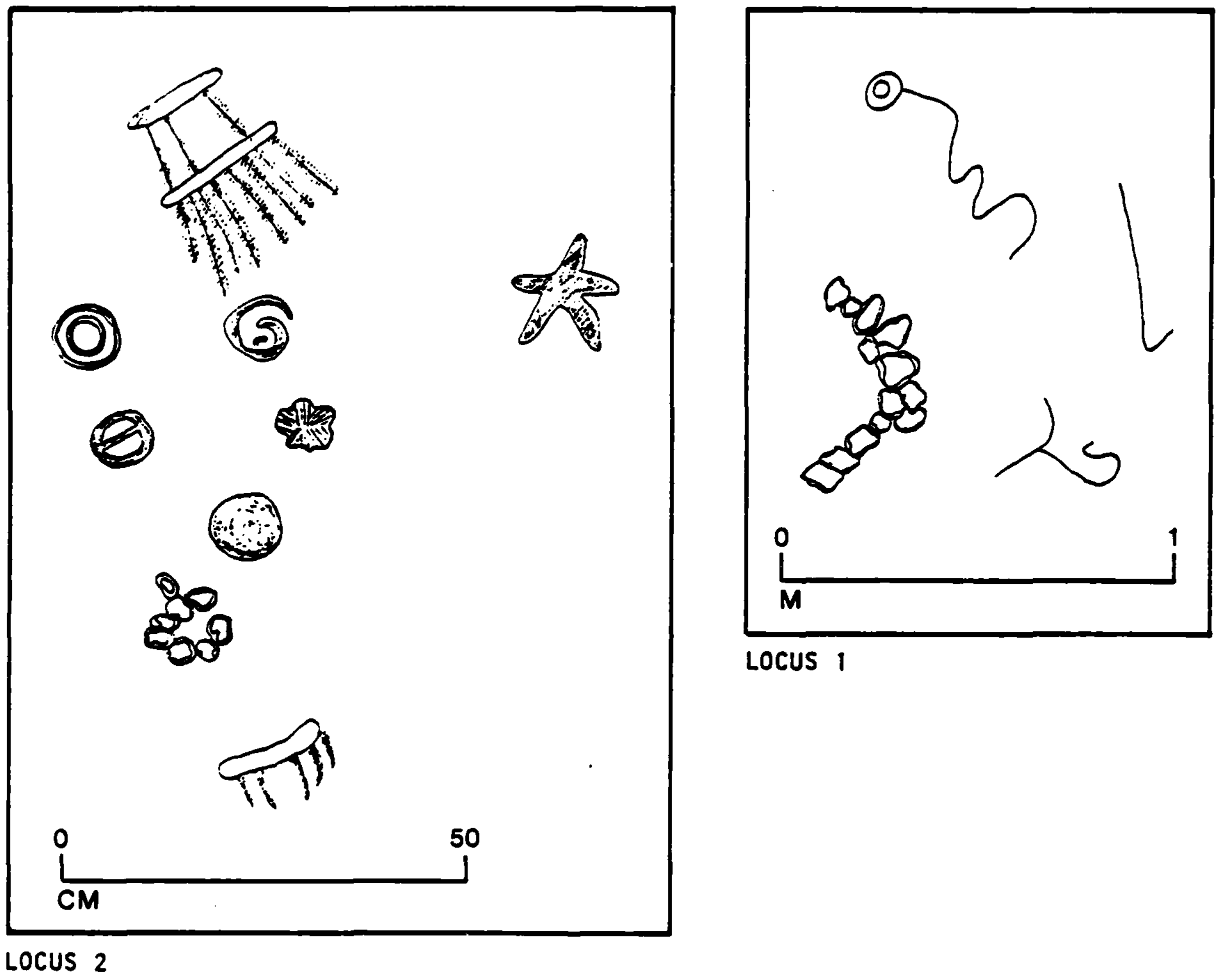
Site MX-181-1/8(off)-M1 is located on an outcrop of younger tuffaceous rock separated from the undifferentiated volcanics of the North Pahroc Range (Tschanz and Pampeyan, 1970). It stands as a unique feature on the lower fan, and undoubtedly provided a distinctive landmark for historic trail blazers as well as prehistoric occupants.

The prehistoric campsite is reflected in two midden areas. In addition to charcoal-discolored soil, these areas contain groundstone, bifacially worked tools, flake tools, fire-cracked rock, and Snake Valley Gray pottery.

Several rock overhangs may have served as shelters; however, only two clearly indicated use. They are small averaging less than six and one-half feet (2 m) of overhang, with directly associated midden areas. No more than 12 inches (30 cm) of deposits were noted in the site area; however, deeper deposits may exist in small pockets on the site.

Ten sherds of Snake Valley Gray pottery and one Rose Springs Corner Notched projectile point were recorded.

Several large tuffaceous boulders contain petroglyphs. Three distinct loci were noted, but other areas may be present. The rocks are badly weathered and exfoliating, making the designs difficult to determine. Loci #1 and #2 (Figure 3-7) contain pecked curvilinear and rectilinear abstract designs. In addition to abstract design, Locus #3 (Figure 3-8) contains two representational elements, one zoomorphic and the other apparently anthropomorphic. The abstract designs fall within Heizer and Baumhoff's (1962) Great Basin Curvilinear and Rectilinear petroglyph styles which are widely distributed over Nevada. The representational style at Locus #3 is more difficult to identify. While the Locus #3 designs may have been made by the later historic occupants of the site, they are uniformly pecked, with faint lines that do not appear recent.



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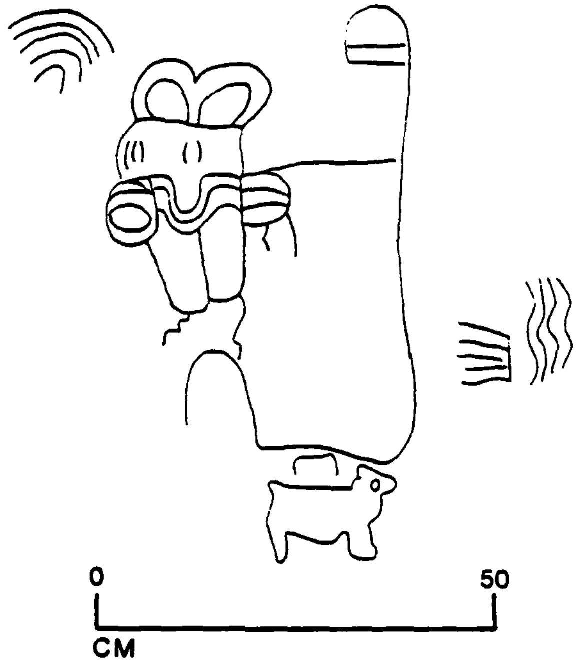
PETROGLYPH PANELS, LOCI 1 AND 2 [MX–181–1/8(OFF)–M1]: NATURAL GROUPING OF ELEMENTS

FIGURE 3-7



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PETROGLYPH PANEL, LOCUS 3
[MX–181–1/8(OFF)–M1] : NATURAL
GROUPING OF ELEMENTS

FIGURE 3-8

3.2.2.3 Summary of Diagnostic Artifacts

Projectile point styles and ceramic traditions may provide chronology when other dating techniques are unavailable; however, only few such diagnostic artifacts were recorded in Dry Lake Valley. The paucity of temporally sensitive artifacts combined with the uncertain association of these artifacts with specific surface assemblages precludes establishing a chronology for the prehistoric sites recorded in Dry Lake Valley. Projectile point and ceramic styles merely indicate a possible temporal-cultural range of occupation.

The projectile points indicate a probable occupation of Dry Lake Valley by at least 5000 B.P., possibly as early as 8000 B.P. Although the number of recorded projectile points is too small for any meaningful inferences about real periods of occupation, it is interesting to note that in Dry Lake Valley as in other parts of the Great Basin the highest percentage of recorded points is from the Archaic period (Elko and Pinto). Although Rose Spring and Eastgate projectile points indicate late prehistoric occupation, no Desert Side Notch points, which occur frequently throughout the Great Basin, were recorded in the survey. The small number of sherds recorded probably reflect only periodic Fremont use of the area sometime between 900 and 1300 A.D.

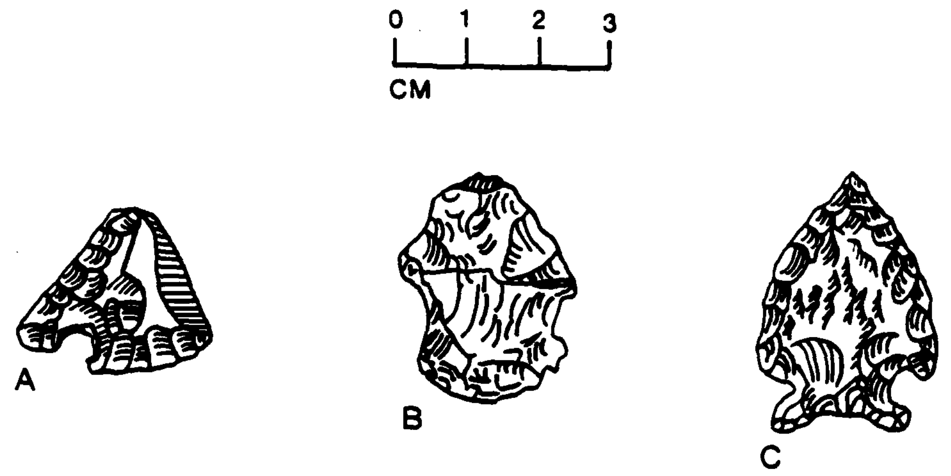
Projectile Points

A total of ten projectile points were recorded in the survey. Due to the change in collection policy in the course of the survey (Section 3.0), only seven of these were collected. All of the projectile points are illustrated in Figure 3-9. Table 3-12 provides a summary of their characteristics.

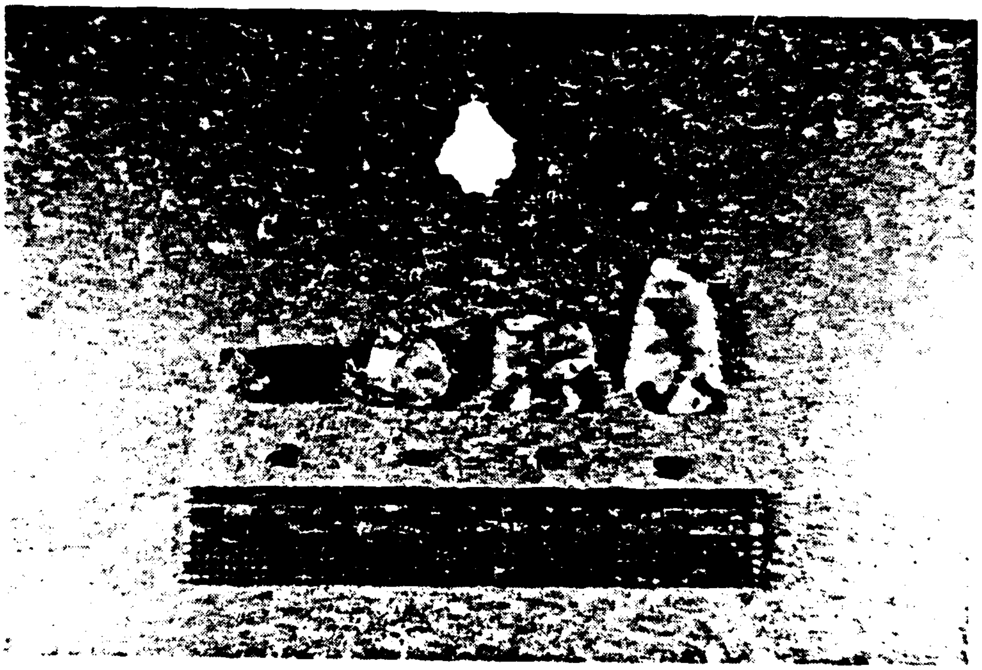
Projectile points were classified on the basis of broad morphological attributes according to the existing Great Basin projectile point taxonomy (Hester, 1973; Heizer and Hester, 1978); however, several points were severely broken and the number of recorded points was too small to indicate a range of significant variability for any specific type. The typological classification, therefore, reflects only generalized Great Basin projectile point styles.

The projectile point styles reflect three broad cultural-temporal traditions: Elko, Pinto, and Rose Spring/Eastgate. Holmer (1979) suggests a temporal range between approximately 4500 B.P. and 3300 B.P. for the Pinto Style in the central and western Great Basin, although the point style has been dated between 8300 B.P. and 6300 B.P. on the Colorado Plateau and on the southern Plains. The Pinto series has not been well-defined (Layton, 1970; O'Connell, 1971) and may have only general significance in cultural history.

The Elko series is widely distributed over the Great Basin. Based on radiocarbon dates, Heizer and Hester (1978) suggest a range between approximately 4000 B.P. and A.D. 1080; however,



UNCOLLECTED PROJECTILE POINTS



COLLECTED PROJECTILE POINTS

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UNCOLLECTED AND COLLECTED
PROJECTILE POINTS

FIGURE 3-9

Temp. Site No.	Figure	Style	Material	Associated Site Type
MX-181-1/18-P1	___ a	Eastgate Expanding Stem	white chert	lithic scatter
MX-181-6/15-P1	___ b	Pinto Square Shoulder	obsidian	lithic scatter
MX-181-4/17-P1	___ c	Elko Eared	pink/white chert	temporary camp
MX-181-5/8-P1	___ a	Elko Eared?	white chert	isolated artifact
MX-181-DTN-EB9-Locus 22	___ b	Rose Spring Corner Notched	black chert	*lithic scatter
MX-181-1/8(off)-M1	___ c	Rose Spring Corner Notched	tachylite	temporary camp
MX-181-DTN-EB9-Locus 23	___ d	Pinto Square Shoulder	tachylite	*isolated artifact
MX-181-DTN-EB9-Locus 19	___ e	Elko Eared?	red chert	temporary camp
MX-181-3/1A-P1	___ f	Elko Eared	yellow chert	quarry
MX-181-DTN-EB9-JG4	___ g	Elko Corner Notched	yellow chert	isolated artifact

* reflects activity area type in larger temporary campsite complex

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DESCRIPTION OF PROJECTILE POINTS

TABLE 3-12

data from Hogup and Danger caves (Aikens, 1970; Fry and Adovasio, 1970) suggest an earlier origin, approximately 8000 B.P., in the eastern Great Basin.

Although defined as separate types, the Rose Spring and Eastgate series often occur together and overlapping radiocarbon dates suggest a similar temporal range from approximately 600 A.D. to historic times (Heizer and Hester, 1978). Corrected and updated radiocarbon dates for the Rose Spring Corner-Notched series provided by Pippin (in Pippin, et al., 1979) indicated a range between 50 B.C. and 1100 A.D.

Ceramics

Four sites in the Dry Lake Valley inventory contained Sevier pottery. All recorded pottery sherds were identified in the field as Snake Valley varieties on the basis of temper and firing characteristics (Madsen, 1977). All but one of the sherds were plain, undecorated grayware. The single decorated sherd included a triangular black-on-gray design. Sites containing pottery are summarized below.

Temp. Site No.	Site Type	Number of sherds	Pottery Type
MX-181-4/2-P1	isolated artifact	1	Snake Valley Black-on-Gray
MX-181-4/2-P2	temporary camp	30	Snake Valley Gray
MX-181-DTN-EB9-Locus #11	temporary camp	1	Snake Valley Gray
MX-181-1/8(off)-M1	temporary camp	10	Snake Valley Gray

The Snake Valley Gray sherds are typical of the Parowan Fremont subarea, centered in the Parowan Valley in southwestern Utah but also including sites to the north (Marwit, 1973). The Parowan Fremont occupation is dated between approximately 900 and 1300 A.D. On the basis of excavations at Conway and O'Malley shelters and a reevaluation of Wheeler's (1942) investigations of Etna Cave, Fowler, et al. (1973) extended the western boundary of the Parowan subarea to include the area of Dry Lake Valley.

3.2.3 Data Analysis

As has been mentioned previously, the IOC survey in Dry Lake Valley was initiated prior to the completion of an overall research design for the study of cultural resources in MX deployment area. Since this problem was recognized from the beginning certain adjustments were made at the onset of the project. Environmental and archeological data were collected on inventory forms similar to those used in the regional sampling survey so that they could be compared to information collected during other MX cultural resources projects. Thus, subsequent analysis of these data according to the recently developed research design is possible.

The inventoried prehistoric data from Dry Lake Valley were examined statistically to distinguish patterns of prehistoric occupation and use of the valley. The tests were conducted in

order to determine whether there is a relationship between prehistoric site locations and certain features of the natural environment. The small sample of historic sites precluded the analysis of historic materials in this fashion.

Four broad features of the natural environment were treated as independent variables: aspect, distance to permanent water source (in meters), vegetation associations (by predominant plant species), and the depositional environment of the landform on which the sample unit was located. Archeological site frequencies were considered as dependent variables. The variable of slope was not included, because of lack of variation between sites.[1] Environmental variables are listed for each sample unit area (HSS, RSS, CMF) in Appendix E. Because environmental variables associated with specific archeo logical sites may vary somewhat from those associated with larger sample unit areas, these are listed separately in Appendices F, G, and H.

The data were grouped in two different ways and separately analyzed: 1) comparable sample units in relation to four environmental variables and prehistoric site frequencies; and 2) discrete archeological sites in relation to two enviromental variables.

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[1] This is a product of engineering design constraints which generally limit construction to areas with less than a 5 degree slope.

The first analysis examines only directly comparable sample survey areas (identical sizes) and examines only the total numbers of sites recorded in these areas, undifferentiated by type. This analysis was based on 237 sample units and 86 archeological sites. Road inventory areas and CMFs and RSSs were not included, because these units differ in size from the shelters. Relocated shelter sites and archeological sites recorded as "off" (entirely outside of the sample unit survey) were also not considered. No attempt was made to reconcile the re-recording of the same large lithic scatter in six different shelter sites as separate loci. Thus, the loci recorded on MX-181-1/22 and MX-181-3/3 through MX-181-3/9 count as separate sites.

The second analysis considers the total inventory of prehistoric sites, separated by type, irrespective of survey area, in relation to two environmental variables. This analysis was based on a total of 132 discrete prehistoric sites which were segregated into the following general types: isolated artifacts, lithic scatters, and food processing/temporary occupation areas. Milling stations, small temporary camps, the large temporary campsite complex, and the prehistoric temporary campsite component of MX-181-1/8(off)-M1 are included in the food processing/temporary occupation areas because of the small numbers of each and because they share similar features indicative of seed food processing activities (groundstone).

a. Aspect. Initial grouping of archeological site data according to aspect indicated a high frequency of sites on east and southeast facing slopes. Analyses were then conducted to see if there was a relationship between aspect and the location of prehistoric sites: that is, to determine whether prehistoric sites are more likely to be located on slopes facing east or southeast. Sample units and archeological sites by aspect are listed below.

Aspect	No. of Sample Units	No. of Sites	Relative Frequency
N	5	0	0%
NE	5	1	20%
E	68	40	59%
SE	24	14	58%
S	46	8	17%
SW	30	10	33%
W	43	8	19%
NW	16	5	31%
TOTAL	237	86	36%

A chi-square (x^2) test indicated a significant difference between aspect and archeological site frequencies (x^2 = 14.977*, df = 7). (The symbol * indicates a 5% significance level.) While these differences may be explained by aspect only, it is also possible that the differences do not reflect aspect directly, but a related variable, such as the locations of chert outcrops: i.e., the high frequency of sites facing east and southeast may be attributed to the natural chert outcrops located on the west side of the valley.

b. Water. Previous archeological investigations indicate that prehistoric sites are likely to be located near permanent sources of water (Thomas, 1972). However, in Dry Lake Valley survey sample units are all located at considerable distances from presently known permanent water sources (from 1770 to >10,000 meters) making any statistical tests of this relationship meaningless in terms of providing information on prehistoric use of the area.

Analysis of distance to intermittent water sources might prove more fruitful. Since intermittent water sources in Dry Lake Valley seem to more clearly reflect seasonal resource availability, rather than water *per se*, the possible relationship of sites to intermittent water is discussed under the analysis of landform below.

c. Vegetation. In order to determine whether archeological sites in Dry Lake Valley were located in reference to specific resource gathering areas which might be reflected in local vegetation communities, the distribution of sites across those communities was analyzed.

Vegetation associations (by dominant plant species) were first tabulated for each sample unit according to archeological site frequencies. Vegetation association types were then grouped according to those which tended to occur together in similar depositional environments: Group #1, budsage, greasewood, green molly, four-wing saltbrush, and shadscale; Group #2, winterfat and little rabbitbrush; Group #3, spiny hopsage,

galetta grass, snakeweed, Mormon tea, and horsebrush; Group #4, big sagebrush and little sagebrush. The grouped vegetation data for the sample units and associated site frequencies are illustrated in below.

Vegetation	No. of Sample Units	No. of Sites	Relative Frequency
Group #1	38	13	34%
Group #2	89	27	30%
Group #3	55	24	44%
Group #4	55	22	40%
TOTAL	237	86	36%

A chi-square analysis indicated no significant differences between sample unit vegetation groupings and archeological site frequencies. This is probably related to the constraints of the sample unit layout, that is, the restricted number of distinct broad community types represented, as well as to the fact that plant communities have been disturbed during historic times.

When all discrete prehistoric sites are separated by type (A-C) and compared to the same vegetation groupings (1-4), a chi-square test indicates significant differences between the variables (X^2 = 22.567**, df = 6). (The symbol ** indicates a 1% significance level.) The grouping of these data is illustrated below.

		Prehistoric Site Type*			
		A	B	C	TOTAL
Vegetation Groups	#1	9	7	9	25
	#2	45	16	7	68
	#3	9	8	0	17
	#4	11	11	0	22
TOTAL		74	42	16	132

*A = Isolated artifacts; B = Lithic scatters; C = Food processing/temporary occupation sites.

Isolated artifacts (A) are widely distributed but most common in the winterfat-rabbitbrush areas (#2). Lithic scatters (B) are also broadly distributed but are most common in winterfat-rabbitbrush and sagebrush zones (#4). Temporary camps/milling stations (C), however, are restricted to the saltbrush (#1) and winterfat-little rabbitbrush areas (#2). This analysis supports the hypothesis that specific site types may be related to particular resource gathering areas which are partially reflected in vegetation groupings. Since these vegetation groupings were defined as communities based at least in part on landform associations, a similar relationship between site types and resource gathering areas should be reflected in the landform analysis.

d. Landform. The previous analysis of environmental variables and archeological site frequencies indicates that prehistoric

sites in Dry Lake Valley are located in reference to specific resource areas. This relationship should be reflected in the location of sites in relation to particular landform features in Dry Lake Valley. Furthermore, different types of prehistoric sites are apparently associated with different landform features.

Sample units were first segregated by the depositional environment of the landform. Because of the extremely small number of sample units located on dunes (7), dune/shorelines (2), playa/shoreline (3), shorelines (4), and playa (3), and since the depositional features occur together along the playa margin, they were all grouped together for purposes of analysis. The other landforms represented in the survey areas were the alluvial plain and alluvial fans. Sample units and archeological sites separated by landform type are illustrated below.

Landform	No. of Sample Units	No. of Sites	Relative Site Frequency
Alluvial fan	118	51	43%
Alluvial plain	100	24	24%
Playa margin	19	11	58%
TOTAL	237	86	36%

A chi-square test indicated that there are significant differences (X^2 = 5.994*, df = 2) between the landform types and

frequencies of archeological sites. However, it should be noted that most of the sample units (92 percent) were either on the alluvial fan (50 percent) or alluvial plain (42 percent). This heavy bias, of course, represents the engineering constraints of the MX shelter locations. On the other hand, though the number of sample units located along the playa margin is small (19), sampling units in this area contain the highest relative frequency of sites (58 percent).

Further analysis supports the hypothesis that prehistoric sites are located with reference to specific resource areas and that these resource areas are reflected as different landform types. When prehistoric sites were segregated by type (A-C) and listed according to type of landform, a chi-square test indicated a highly significant difference between variables (X^2 = 22.477**, df = 4). This analysis is summarized below.

		Prehistoric Site Type*			
		A	B	C	TOTAL
Landform	Alluvial fan	33	22	1	56
	Alluvial plain	31	14	5	50
	Playa margin	10	6	10	26
	TOTAL	74	42	16	132

*A = isolated artifcats; B = Lithic scatters; C = Food processing/temporary occupation sites

Lithic scatters (B) and isolated artifacts (A) were most frequently found on the alluvial fan or alluvial plain. The quarry

sites are located on the upper fans where the chert cobble sources are available. Workshop sites are found all over the fans, but generally decrease in frequency as the distance from the material sources increases (Figures 3-4 and 3-5). Therefore, the distribution of these sites is probably related to the location of special resources. On the other hand, temporary camps and milling stations (C) were most frequently found along the playa margin.

Only one temporary camp was located on the alluvial fan, and this was actually on a rock outcrop on the fan. The other temporary campsites were located in reference to a large intermittent water sources; either along the playa margin or at the edge of a major wash. The presence of groundstone at these sites probably indicates that seed foods were located nearby. Stream flow occurs in these washes only during short periods after high intensity rains and from snowmelt runoff. The greater soil moisture content in these areas promotes the growth of grasses, especially ricegrass. Similarly, ricegrass is abundant in the dunes along the playa margins. Since ethnographic evidence indicates that ricegrass was a significant aboriginal food resource (Steward, 1938; Kelly, 1976), the location of temporary camps and milling stations along intermittent water sources may be at least partially related to the distribution of ricegrass. Playa margin camps may also have been located in reference to other seasonal resources associated with the periodic florescence of the playa, including other

seed plants or migratory or nearby resident waterfowl (Bergen, 1979; Busby, 1979).

The use of washes and the playa as a source of water per se may also be indicated, however, the use of the water collected in the playa would be limited by its potability. The use of washes is less likely given the rapid rate of runoff and the low water table in most parts of Dry Lake Valley which would limit water catchment.

3.2.4 Summary

Archeological investigations in Dry Lake Valley prior to the IOC field survey revealed little concerning its prehistoric pattern of use and occupation. Although 45 prehistoric sites were previously recorded, half of these were isolated artifacts. Considering the relatively large number of surveys in Dry Lake Valley (Nevada Archeological Survey and BLM Project Record Files), the total number of recorded sites was very small and seemed to indicate extremely limited prehistoric use of the area. The IOC Class III inventory has substantially modified this view.

In spite of the physical limitations on the placement of sample units, which were determined by geotechnical siting criteria rather than archeological research questions, a pattern of prehistoric land use and occupation has emerged. Discoveries of sites along the playa margin indicate much more extensive use and occupation of the area than was previously indicated.

Archeological sites tend to be located near such special resources as chert sources and native grasses. Discoveries of large quarries and lithic scatters on the west side of the valley indicate the importance of prehistoric litchic workshop activities in the area. A pattern of temporary occupation and intermittent use of special resource areas in the lower valley basin has also been clarified. The limited types and low density of surface artifacts indicates only temporary occupation or intermittent use of the valley.

Permanent occupation was probably forestalled by the limited number and discharge of permanent water sources and the paucity of important food resources.

Apart from the Rattlesnake Spring site, which also has a chert quarry source, sites previously recorded at these small springs indicate only limited resource gathering or processing activities. Important food resources such as pinyon and grasses are available in the basin in limited quantities. The most important food resources in Dry Lake Valley were apparently distributed along the playa margin and available only seasonally.

A total of 132 new prehistoric sites were recorded. Two previously unknown, but significant archeological site areas were identified, the playa margin temporary campsite complex and the petroglyph site with its associated campsite. The extension of the Sevier culture, either by contact or direct occupation, was established in Dry Lake Valley. Archaic occupation is

indicated by the presence of Elko, Pinto, Rose Spring, and Eastgate projectile points. A large quarry site and numerous workshop areas were also identified.

Interpreted within the framework of the MX regional research design the temporary camps and campsite complex can be considered "field camps" and the remainder of the sites in the valley may be classified as "locations" at which resource procurement was carried out.

The IOC field survey did not answer several important questions. The full temporal range of human occupation of the valley has not been determined. Although the Sevier culture is well-dated by the Snake Valley pottery, the Archaic occupation can be only broadly estimated from the few poorly-dated projectile points recorded. Likewise, the question of whether or not Early Man was present along the post-Pleistocene lakeshores or marshes in Dry Lake Valley has not been answered. It is also impossible to tell whether the distributions of resources differed in the past and if they might have provided more favorable environments for prehistoric occupation.

Although surface assemblages of sites along the playa margin indicate special resource processing and at least temporary occupation, the precise nature of these resources and the actual duration of occupation cannot be determined without further investigation. Likewise, although quarry and workshop areas have been identified, the full range of activities at lithic

scatter sites has not been established. Further surface collections and test excavations would be necessary to establish a firm chronology and the full range of use and occupation of the valley.

4.0 NATIONAL REGISTER OF HISTORIC PLACES RECOMMENDATIONS

The cultural resources discovered during the IOC field survey in Dry Lake Valley are discussed below in terms of their potential National Register eligibility.

4.1 NATIONAL REGISTER CRITERIA FOR ELIGIBILITY

To qualify for the National Register of Historic Places, a cultural property must meet one of the criteria for significance established by the President's Advisory Council on Historic Preservation. The following criteria are used to evaluate potential entries to the National Register:

> The quality of significance in American history, architecture, archeology, and culture is present in districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling, and association, and:
>
> (1) That are associated with events that have made a significant contribution to the broad patterns of our history; or
>
> (2) That are associated with the lives of persons significant in our past; or
>
> (3) That embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or
>
> (4) That have yielded, or may be likely to yield, information important in prehistory or history (36 CFR 800.10).

Normally only those properties at least 50 years old are eligible, unless they are of exceptional importance.

4.2 DRY LAKE VALLEY CULTURAL RESOURCES

Several of the sites discovered during the IOC field survey may be eligible for nomination to the National Register. The eligibility of sites by site type is discussed below.

The criteria used to recommend avoidance mitigation were those developed by the Bureau of Land Management (Hanes, 1980) and listed in Section 3.1.4 of this report. These criteria differ from the criteria of determinations of significance and eligibility for the National Register of Historic Places. Avoidance mitigation is further discussed in Section 5.0 of this report.

4.2.1 Isolated Artifacts

None of the 74 isolated artifacts qualifies for the National Register. Although the distribution pattern of the artifacts may provide some data on the prehistoric and historic occupation of Dry Lake Valley, it is unlikely that any individual artifact can provide significant information. For a list of the site numbers for isolated artifacts see Table 3-6 in Section 3.2.2 above. No avoidance mitigation was recommended for any of the isolated artifacts.

4.2.2 Lithic Scatters

A total of 42 lithic scatters were discovered in Dry Lake. Table 4-1 summarizes the National Register potential of these lithic scatters. No avoidance mitigation was recommended for any of the lithic scatters.

Site Number	Potential National Register Eligibility	Reason	Avoidance Mitigation Recommended
Small Lithic Scatters			
MX-181-4/9-P1	No	All consist of two artifacts.	No
MX-181-4/13-P2	No	Not eligible for same reasons	No
MX-181-9116-P1	No	as isolated artifacts.	No
MX-181-CMP/7-P1	No		No
MX-181-DTN-EB2	No		No
Large Lithic Scatters			
MX-181-1/9-P1	No	All large lithic scatters	No
MX-181-1/18-P1	No	contain fewer than 30 arti-	No
MX-181-1/19-P1	No	facts in the sample unit area,	No
MX-181-1/23-P1	No	are very low density (average	No
MX-181-3/1-P1	No	1/75 m^2), and aside from pro-	No
MX-181-3/2-P1	No	jectile points which were found	No
MX-181-3/3-P1	No	at three sites, contain no diag-	No
MX-181-3/4-P1	No	nostic tool types. These sites	No
MX-181-3/11-P1	No	would not qualify unless sub-	No
MX-181-3/16-P1	No	surface deposits, that were not	No
MX-181-4/13-P1	No	recognized during the surface	No
MX-181-6/2-P1	No	survey, are present. Subsurface	No
MX-181-6/6-P1	No	testing would be necessary to	No
MX-181-6/10-P1	No	further determine their potential	No
MX-181-6/14-P1	No		No
MX-181-6/15-P1	No		No
MX-181-6/16-P1	No		No
MX-181-6/17-P1	No		No
MX-181-6/18-P1	No		No
MX-181-7/1-P1	No		No
MX-181-9/4-P1	No		No
MX-181-CMP/7-P1	No		No
MX-181-DTN-JG1	No		No

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NATIONAL REGISTER POTENTIAL OF LITHIC SCATTERS

TABLE 4-1

Site Number	Potential National Register Eligibility	Reason	Avoidance Mitigation Recommended
Large Lithic Scatters (Cont.)			
MX-181-DTN-EB1	No		No
MX-181-DTN-EB6	No		No
MX-181-DTN-AM4	No		No
MX-181-DTN-AM7	No		No
MX-181-DTN-AM8	No		No
Chipping Circles			
MX-181-4/14-P1	No	Sites consist entirely of unmodified flakes indicative of a single activity. Along with other sites in area they can provide information on prehistoric utilization of valley. They are not significant individually.	No
MX-181-9/5-P2	No		No
MX-181-9/19-P1	No		No
Quarries			
MX-181-1/22, 3/5 - 3/9-P1	Maybe	All 4 quarry sites may qualify for the National Register. Because quarries are located on alluvial slopes, they may have depth, and subsurface testing would be necessary to determine their actual potential.	Only for unit 3/5 as it is most dense and contains most representative artifacts
MX-181-3/1A-P1	Maybe		No
MX-181-6/1-P1	Maybe		No
MX-181-6/19-P1	Maybe		No

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NATIONAL REGISTER POTENTIAL OF LITHIC SCATTERS

TABLE 4-1

4.2.3 Milling Stations

None of the sites classified as milling stations would qualify for the National Register. These sites consist of 1-3 groundstone artifacts and lack materials indicative of sustained occupation.

They can provide information on the settlement-subsistence pattern of the valley, but no one site would qualify. Milling station sites include MX-181-2/16-P1, MX-181-8/4-P1, MX-181-DTN-AM12, and MX-181-DTN-EP3. No avoidance mitigation recommendations were made for any milling station site.

4.2.4 Temporary camps

A total of 10 temporary camps were recorded in Dry Lake Valley. The small site size and low density of artifacts at these sites suggests only limited occupation. Only 2 of the temporary camps would qualify for the National Register (Table 4-2). These two may have buried deposits and contain a variety of artifact types. Avoidance mitigation was recommended and carried out for two sites.

4.2.5 Temporary Campsite Complex

MX-181-DTN-EB9 is a complex of features reflecting milling activities and temporary camping in the dunes on the west side of Dry Lake Playa. This site is extremely important, because it is the largest and most complex site known in Dry Lake Valley. The site contains evidence of occupation from middle Archaic to

Site Number	Potential National Register Eligibility	Reason	Avoidance Mitigation Recommended
MX-181-4/2-P2	Yes	Site may have depth, contains variety of artifacts; can yield important information.	Yes
MX-181-4/3-P1	Yes		Yes
MX-181-4/6-P1	Maybe	The artifacts at these sites were very sparse, and the sites were heavily disburbed by grazing, erosion, and deflation. No depth was apparent and a determination of eligibility could not be made from surface observation. Subsurface testing would be required to determine potential.	No
MX-181-4/17-P1	Maybe		No
MX-181-7/2-P1	Maybe		No
MX-181-8/1-P1	Maybe		No
MX-181-8/7-P1	Maybe		No
MX-181-10/8-P1	Maybe		No
MX-181-DTN-EB11	Maybe		No
MX-181-C2 Road 3	Maybe		No

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NATIONAL REGISTER POTENTIAL OF TEMPORARY CAMPS

TABLE 4-2

Fremont times, and it may provide important data on the utilization of playa margin resources. This site is very likely to be eligible for the National Register, and avoidance mitigation was recommended and carried out.

4.2.6 Site MX-181-1/8(off)-M1

Site MX-181-1/8(off)-M1 contains petroglyphs, a prehistoric campsite, and an historic campsite and trail. It is unique among those presently recorded in Dry Lake Valley and is significant for its historic and prehistoric components. This site is very likely to be eligible for the National Register of Historic Places. Because the site was located outside the direct impact areas, no avoidance mitigation was recommended.

5.0 MITIGATION RECOMMENDATIONS

5.1 AVOIDANCE MITIGATION RECOMMENDATIONS

The cultural resources survey of Dry Lake Valley identified numerous archeological sites that will be impacted by the construction of the proposed missile shelters, the DTN and Cluster 2 roads. Table 5-1 presents a list of all cultural resources discovered during this survey and the relationship of those sites to the shelter areas and roads. According to the criteria established prior to the initiation of fieldwork, avoidance mitigation was recommended and carried out for the following sites: MX-181-3/5-P1, a large quarry site containing an extremely dense concentration of lithic materials; MX-181-4/2-P2 and MX-181-4/3-P1, temporary campsites containing diagnostic artifacts and potential buried material; and MX-181-DTN-EB9, a large site complex located along the western margin of Dry Lake Playa.

Avoidance mitigation at the archeological sites located in proposed shelter units consisted of moving the shelters to areas where no cultural resources were found. To avoid the DTN site, the road was relocated approximately 0.6 mile (965 m) to the west of the site boundaries.

5.2 LIMITATIONS OF AVOIDANCE MITIGATION AND RECOMMENDATIONS FOR FUTURE WORK*

The Dry Lake Valley project was a test case, and several limitations in the methodology can be discussed. The most important

* These limitations and recommendations have been developed through discussions with Richard Hanes, BLM Nevada State Archeologist.

SITE NUMBER	SITE TYPE	POTENTIAL FOR* PROJECT RELATED DISTURBANCES
MX-181-1/1-P1	Isolated Artifact (Prehistoric)	Medium
MX-181-1/8(off)-M1	Two Sevier Fremont Prehistoric camps and three Petroglyph loci/historic trash	High
MX-181-1/9-P1	Lithic scatter; large low density	High
MX-181-1/13-P1	Isolated Artifact (Prehistoric)	Medium
MX-181-1/14-H1	Historic Section Marker	Medium
MX-181-1/15-P1	Isolated Artifact (Prehistoric)	Medium
MX-181-1/15-P2	Isolated Artifact (Prehistoric)	Medium
MX-181-1/16-P1	Isolated Artifact (Prehistoric)	High
MX-181-1/16-P2	Isolated Artifact (Prehistoric)	High
MX-181-1/18-P1	Lithic scatter; large, low density	High
MX-181-1/19-P1	Lithic scatter; large, low density	High
MX-181-1/20-P1	Isolated Artifact (Prehistoric)	Low
MX-181-1/20-P2	Isolated Artifact (Prehistoric)	Medium
MX-181-1/22-P1	Lithic scatter; large, low density	High
MX-181-1/23-P1	Lithic scatter; large, low density	High
MX-181-2/2-P1	Isolated Artifact (Prehistoric)	Medium
MX-181-2/13-P1	Isolated Artifact (Prehistoric)	Medium

* High: In direct impact area or will be particularly subject to indirect impacts
Medium: In survey area outside of direct impact area and may receive indirect impacts
Low: Not in survey area and unlikely to receive indirect impacts

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CULTURAL RESOURCES SITES DISCOVERED DURING IOC SURVEY AND POTENTIAL FOR PROJECT-RELATED IMPACTS

TABLE 5-1

SITE NUMBER	SITE TYPE	POTENTIAL FOR PROJECT RELATED DISTURBANCES
MX-181-2/16-P1	Isolated Artifact (Prehistoric)	Medium
MX-181-2/22A(off)-P1	Isolated Artifact (Prehistoric)	Low
MX-181-2/23A-P1	Isolated Artifact (Prehistoric)	Medium
MX-181-2/23A-P2	Isolated Artifact (Prehistoric)	Medium
MX-181-3/1-P1	Lithic Scatter; large, low density	High
MX-181-3/1A-P1	Lithic Scatter; large, low density	High
MX-181-3/2-P1	Lithic Scatter; large, low density	High
MX-181-3/3-P1	Lithic Scatter; large, low density	High
MX-181-3/4-P1	Lithic Scatter; large, low density	High
MX-181-3/5-P1	Lithic Scatter/quarry	Low (unit resited)
MX-181-3/5(off)-P1	Lithic Scatter/quarry	Low
MX-181-3/6-P1	Lithic Scatter/quarry	High
MX-181-3/7-P1	Lithic Scatter/quarry	High
MX-181-3/8-P1	Lithic Scatter/quarry	High
MX-181-3/9-P1	Lithic Scatter/quarry	High
MX-181-3/11-Pl	Lithic Scatter; large low density	High
MX-181-3/12-P1	Isolated Artifact (Prehistoric)	Medium
MX-181-3/12-P2	Isolated Artifact (Prehistoric)	Medium
MX-181-3/15-P1	Isolated Artifact (Prehistoric)	Medium
MX-181-3/16-P1	Lithic Scatter; large low density	High
MX-181-3/19-Pl	Isolated Artifact (Prehistoric)	Medium
MX-181-3/20-P1	Isolated Artifact (Prehistoric)	Medium
MX-181-4/2-P1	Isolated Artifact (Prehistoric)	Low (unit resited)
MX-181-4/2-P2	Temporary camp	Low (unit resited)
MX-181-4/3-P1	Temporary camp	Low (unit resited)

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CULTURAL RESOURCES SITES DISCOVERED DURING IOC SURVEY AND POTENTIAL FOR PROJECT-RELATED IMPACTS

TABLE 8-1

SITE NUMBER	SITE TYPE	POTENTIAL FOR PROJECT RELATED DISTURBANCES
MX-181-4/6-P1	Temporary camp	High
MX-181-4/9(off)-P1	Lithic Scatter; small low density	Low
MX-181-4/13-P1	Lithic Scatter; large, low density	Medium
MX-181-4/13-P2	Ltihic Scatter; small low density	Medium
MX-181-4/14-P1	Chipping Station	Medium
MX-181-4/17-P1	Temporary Camp	Medium
MX-181-5/8-P1	Isolated Artifact (Prehistoric)	none (collected)
MX-181-5/19-H1	Historic campsite	High
MX-181-5/19A-P1	Isolated Artifact (Prehistoric)	Medium
MX-181-5/21-P1	Isolated Artifact (Prehistoric)	Medium
MX-181-6/1-P1	Lithic Scatter/quarry	High
MX-181-6/1A-P1	Lithic Scatter/quarry	High
MX-181-6/1B-P1	Lithic Scatter/quarry	High
MX-181-6/1C-P1	Lithic Scatter/quarry	High
MX-181-6/2-P1	Lithic Scatter; large low density	High
MX-181-6/2A-P1	Lithic Scatter; large low density	High
MX-181-6/3-P1	Isolated Artifact (Prehistoric)	Medium
MX-181-6/3-P2	Isolated Artifact (Prehistoric)	Medium
MX-181-6/6-P1	Lithic Scatter; large low density	High
MX-181-6/9-P1	Isolated Artifact (Prehistoric)	Medium
MX-181-6/10-P1	Lithic Scatter; large low density	High
MX-181-6/11-P1	Isolated Artifact (Prehistoric)	High
MX-181-6/14-P1	Lithic Scatter; large low density	High
MX-181-6/14A-P1	Isolated Artifact	Medium
MX-181-6/15-P1	Lithic Scatter; large, low density	High
MX-181-6/16-P1	Lithic Scatter; large low density	High
MX-181-6/17-P1	Lithic Scatter; large low density	High

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CULTURAL RESOURCES SITES DISCOVERED DURING IOC SURVEY AND POTENTIAL FOR PROJECT-RELATED IMPACTS

TABLE 5-1

SITE NUMBER	SITE TYPE	POTENTIAL FOR PROJECT RELATED DISTURBANCES
MX-181-6/18-P1	Lithic Scatter; large, low density	High
MX-181-6/18A-P1	Lithic Scatter; large, low density	High
MX-181-6/19-P1	Lithic Scatter/quarry	High
MX-181-6/21-P1	Isolated Artifact (Prehistoric)	Medium
MX-181-7/1-P1	Lithic Scatter; large low density	Medium
MX-181-7/2-P1	Temporary Camp	Medium
MX-181-7/3-P1	Isolated Artifact (Prehistoric)	Medium
MX-181-7/8-P1	Isolated Artifact (Prehistoric)	Medium
MX-181-7/14-P1	Isolated Artifact (Prehistoric)	Medium
MX-181-7/22(off)-P1	Isolated Artifact (Prehistoric)	Low
MX-181-8/1-P1	Temporary Camp	High
MX-181-8/4-P1	Milling Station	Medium
MX-181-8/7-P1	Temporary Camp	High
MX-181-8/11-P1	Isolated Artifact (Prehistoric)	Medium
MX-181-8/12-P1	Isolated Artifact (Prehistoric)	Medium
MX-181-8/12(off)-P1	Isolated Artifact (Prehistoric)	Medium
MX-181-8/12(off)-P2	Isolated Artifact (Prehistoric)	Low
MX-181-8/14(off)-H1	Historic section corner	Low
MX-181-8/14-P1	Isolated Artifact (Prehistoric)	Medium
MX-181-9/4-P1	Lithic Scatter; large low density	High
MX-181-9/5-P1	Isolated Artifact (Prehistoric)	Medium
MX-181-9/5-P2	Chipping circle	Medium
MX-181-9/6-P1	Isolated Artifact (Prehistoric)	Medium
MX-181-9/14-P1	Isolated Artifact (Prehistoric)	Medium
MX-181-9/16-P1	Lithic Scatter; small low density	Medium
MX-181-9/19-P1	Chipping Circle	High

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CULTURAL RESOURCES SITES DISCOVERED DURING IOC SURVEY AND POTENTIAL FOR PROJECT-RELATED IMPACTS

TABLE 9-1

SITE NUMBER	SITE TYPE	POTENTIAL FOR PROJECT RELATED DISTURBANCES
MX-181-10/2-P1	Isolated Artifact (Prehistoric)	Low
MX-181-10/8-P1	Temporary camp	High
MX-181-10/9-P1	Isolated Artifact (Prehistoric)	Medium
MX-181-10/12-P1	Isolated Artifact (Prehistoric)	Medium
MX-181-10/12A-P1	Isolated Artifact (Prehistoric)	High
MX-181-10/19-P1	Isolated Artifact (Prehistoric)	High
MX-181-CMF/6-P1	Isolated Artifact (Prehistoric)	High
MX-181-CMF/6-P2	Isolated Artifact (Prehistoric)	High
MX-181-CMF/7-P1	Lithic Scatter; large low density	Medium
MX-181-CMF/7-P2	Lithic Scatter; large low density	Medium
MX-181-CMF/8A-P1	Isolated Artifact (Prehistoric)	Medium
MX-181-CMF/9-P1	Isolated Artifact (Prehistoric)	Medium
MX-181-CMF/9-P2	Isolated Artifact (Prehistoric)	Medium
MX-181-DTN-JG1	Lithic Scatter; large low density	High
MX-181-DTN-JG2	Lithic Scatter; large low density	High
MX-181-DTN-JG3	Lithic Scatter; large low density	High
MX-181-DTN-JG4	Isolated Artifact (Prehistoric)	None (collected)
MX-181-DTN-JG5	Isolated Artifact (Prehistoric)	High
MX-181-DTN-JG6	Isolated Artifact (Prehistoric)	High
MX-181-DTN-EB1	Lithic Scatter; large low density	High
MX-181-DTN-EB2	Lithic Scatter; small low density	High
MX-181-DTN-EB3	Milling station	High

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CULTURAL RESOURCES SITES DISCOVERED DURING IOC SURVEY AND POTENTIAL FOR PROJECT-RELATED IMPACTS

TABLE 8-1

SITE NUMBER	SITE TYPE	POTENTIAL FOR PROJECT RELATED DISTURBANCES
MX-181-DTN-EB4	Isolated Artifact (Prehistoric)	High
MX-181-DTN-EB5	Isolated Artifact (Prehistoric)	High
MX-181-DTN-EB6	Lithic Scatter; large low density	High
MX-181-DTN-EB7	Isolated Artifact (Prehistoric)	High
MX-181-DTN-EB8	Isolated Artifact (Prehistoric)	High
MX-181-DTN-EB9	Large Temporary Campsite Complex	High
MX-181-DTN-EB10	Isolated Artifact (Prehistoric)	High
MX-181-DTN-EB11	Temporary camp	High
MX-181-DTN-EB12	Isolated Artifact (Prehistoric)	High
MX-181-DTN-AM1	Isolated Artifact (Prehistoric)	High
MX-181-DTN-AM2	Isolated Artifact (Prehistoric)	High
MX-181-DTN-AM3	Isolated Artifact (Prehistoric)	High
MX-181-DTN-AM4	Lithic Scatter; large low density	High
MX-181-DTN-AM5	Isolated Artifact (Prehistoric)	High
MX-181-DTN-AM6	Isolated Artifact (Prehistoric)	High
MX-181-DTN-AM7	Lithic Scatter; large low density	High
MX-181-DTN-AM8	Lithic Scatter; large low density	High
MX-181-DTN-AM9	Isolated Artifact (Prehistoric)	High
MX-181-DTN-AM10	Isolated Artifact (Prehistoric)	High
MX-181-DTN-AM11	Isolated Artifact (Prehistoric)	High
MX-181-DTN-AM12	Milling Station	High
MX-181-DTN-AM13	Isolated Artifact (Prehistoric)	High

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TABLE 5-1

SITE NUMBER	SITE TYPE	POTENTIAL FOR PROJECT RELATED DISTURBANCES
MX-181-DTN-AM14	Isolated Artifact (Prehistoric)	High
MX-181-DTN-AM15	Isolated Artifact (Prehistoric)	High
MX-181-DTN-AMH1	Historic section marker	High
MX-181-DTN-AMH2	Isolated Artifact (Historic)	High
MX-181-DTN-AMH3	Isolated Artifact (Historic)	High
MX-181-C2/Road-P1	Isolated Artifact (Prehistoric)	High
MX-181-C2/Road-P2	Isolated Artifact (Prehistoric)	High
MX-181-C2/Road-P3	Temporary camp	High
MX-181-C2/Road-P4	Isolated Artifact (Prehistoric)	High
MX-181-C2/Road-P5	Isolated Artifact (Prehistoric)	High
MX-181-C2/Road-P6	Isolated Artifact (Prehistoric)	High
MX-181-DC2/Road-H1	Isolated Artifact (Prehistoric)	High

Ertec
The Earth Technology Corporation

MX SITING INVESTIGATION
DEPARTMENT OF THE AIR FORCE
BMO/AFRCE-MX

CULTURAL RESOURCES SITES DISCOVERED DURING IOC SURVEY AND POTENTIAL FOR PROJECT-RELATED IMPACTS

TABLE 5-1

of these limitations is that avoidance as a principal means of mitigating impacts to cultural resource sites is not expected to be sufficient in all situations.

The DTN site and the petroglyph site are examples of the inadequacy of avoidance as the only form of mitigation. As discussed in the description of the DTN site, there are numerous loci, including hearth features, milling stations, and lithic scatters with diagnostic artifacts, situated on the western edge of the playa and covering an area 13,205 by 305 feet (4025 by 100 m). To avoid this site, the road was relocated; however, the buffer zone between the site and the relocated road is in many places very small (less than 100 meters). The movement of the road will not adequately protect the site from indirect impacts as access to the valley is increased by construction activities. It is therefore recommended that a data recovery program, consisting of systematic surface collection and test excavations of a sample of the DTN site, be implemented prior to construction.

Site MX-181-1/8(off)-M1 is another example of a site for which avoidance mitigation is not sufficient. As discussed previously, this is a multicomponent site containing a prehistoric campsite and petroglyphs and a historic campsite and trail. This site is not located in any of the areas to be directly impacted by the project, but the probability that it will be impacted as traffic into the valley increases is high. A data recovery and protection program is recommended for this site also. Through systematic surface collection and test excava-

tions of a sample of this site and by installing fencing, it may be possible to protect and preserve the resources located there.

One important problem with the mitigation criteria and methodology is that the determination of site significance and mitigation recommendations on a case-by-case basis is not sufficient. The significance of any given archeological site can be assessed only in relation to other resources in the area; because this survey was the most intensive ever carried out in the valley, there was little basis for evaluating the resources on a site-by-site basis. It is therefore suggested that recommendations for relocating units be made after analysis is complete, rather than on a site-by-site basis.

Another problem in determining the significance of resources discovered during the survey and recommending avoidance mitigation is that this was a preliminary study, and no systematic surface collection or subsurface testing was carried out. It is recommended that a follow-up study be conducted in Dry Lake Valley prior to construction activities. During this next phase, a sample of each type of site should be systematically collected and tested, allowing for the development of more effective mitigation plans for specific sites and site types.

Finally, the issue of Native American concerns were not addressed as part of the initial scope of study for this project, although presently plans for such are being formulated.

Studies should include determinations of significance relative to the Native American Religions Freedom Act, and to the National Register of Historic Places. This should be done at the beginning of or concurrently with the field survey so that Native American input can be considered in National Register of Historic Places determinations of archeological sites, and so important non-archeological sites can be effectively mitigated.

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APPENDIX A

APPENDIX A

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APPENDIX B

APPENDIX B

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APPENDIX C

APPENDIX C

SHELTER SUMMARY TABLES

CLUSTER 1

Units	Legal Descriptions			Maps		Findings	
Sample Unit No.	Twn	Range	Section	MX 1:9600	U.S.G.S.	Archeological Site	
MX-181-1/1	T4S,	R63E,	NW 1/4 Sec 12	#33	Pahroc Summit Pass	MX-181-1/1-P1	Isolated flake; retouched; brown jasper.
MX-181-1/2	T4S,	R63E,	NE 1/4 and NW 1/4 Sec. 2	#33	Pahroc Spring	None	
MX-181-1/3	T4S,	R64E,	NW 1/4 Sec. 7	#34	Pahroc Spring SE	None	
MX-181-1/3A*	T4S,	R64E,	NW 1/4 Sec. 7	#34	Pahroc Spring SE	None	
MX-181-1/4	T4S,	R64E,	NW 1/4 Sec. 6	#34	Pahroc Spring NE	None	
MX-181-1/5	T3S,	R63E,	SW 1/4 Sec. 36	#33	Pahroc Spring NE	None	
MX-181-1/6	T4S,	R64E,	NW 1/4 Sec. 5	#34	Pahroc Spring NE	None	
MX-181-1/7	T3S,	R64E,	NE 1/4 Sec. 32	#34	Pahroc Spring NE	None	
MX-181-1/8	T3S,	R64E,	NW 1/4 Sec. 29	#34	Pahroc Spring NE	None	
	T3S,	R64E,	SE 1/4 and NE 1/4 Sec. 30	#34	Pahroc Spring NE	MX-181-1/8(off)-M1	- Two Sevier Fremont Prehistoric Temporary Camps and three Petroglyph Loci/Historic trash
MX-181-1/9	T3S,	R63E,	SE 1/4 Sec. 13	#30	Pahroc Spring NE	MX-181-1/9-P1	Lithic scatter; large low density
MX-181-1/10	T3S,	R64E,	NE 1/4 and SE 1/4 Sec. 20	#31	Pahroc Spring NE	None	
MX-181-1/11	T3S,	R64E,	SE 1/4 Sec. 18 SW 1/4 Sec. 17	#31	Pahroc Spring NE	None	
MX-181-1/12	T3S,	R64E,	NE 1/4 and NW 1/4 Sec. 21	#31	Pahroc Spring NE	None	
MX-181-1/13	T3S,	R64E,	SW 1/4 Sec. 8	#31	Pahroc Spring NE	MX-181-1/13-P1	Isolated thinning flake; grey chert
MX-181-1/14	T3S,	R64E,	NE 1/4 and SE 1/4 Sec. 16	#31	Pahroc Spring NE	MX-181-1/14-H1	1881 Historic section marker
MX-181-1/15	T3S,	R64E,	SW 1/4 Sec. 9	#31	Pahroc Spring NE	MX-181-1/15-P1 MX-181-1/15-P2	Isolated flake; yellow chert Isolated flake; white chert

CLUSTER 1 (Cont.)

Units	Legal Descriptions			Maps		Findings	
Sample Unit No.	Twn	Range	Section	MX 1:9600	U.S.G.S.	Archeological Site	
MX-181-1/16	T3S,	R64E,	SE 1/4 Sec. 4	#31	Pahroc Spring NE	MX-181-1/16-P1	Isolated flake; slightly translucent obsidian
						MX-181-1/16-P2	Isolated flake; yellow/ brown chert
MX-181-1/17	T3S,	R64E,	NW 1/4 Sec. 4	#31	Pahroc Spring NE	None	
MX-181-1/18	T3S,	R64E,	NW 1/4 Sec. 5	#31	Pahroc Spring NE	MX-181-1/18-P1	Lithic scatter, large low density
MX-181-1/19	T2S,	R64E,	NE 1/4 and NW 1/4 Sec. 31	#28	Pahroc Spring NE	MX-181-1/19-P1	Lithic scatter; large low density
MX-181-1/20	T2S,	R64E,	NW 1/4 Sec. 29	#28	Pahroc Spring NE	MX-181-1/20-P1	Isolated flake, brown chert
			NE 1/4 Sec. 30			MX-181-1/20-P2	Isolated flake; grey/ brown chert
MX-181-1/21	T2S,	R64E,	NE 1/4 Sec. 29 NW 1/4 Sec. 28	#28	Pahroc Spring NE	None	
MX-181-1/22	T2S,	R64E,	SW 1/4 Sec. 19	#28	Deadman Spring SE	MX-181-1/22-P1	Lithic scatter; large low density
MX-181-1/23	T2S,	R64E,	SE 1/4 Sec. 17	#28	Deadman Spring SE	MX-181-1/23-P1	Lithic scatter; large low density

* Resiting

CLUSTER 2

Units	Legal Descriptions			Maps		Findings	
Sample Unit No.	Twn	Range	Section	MX 1:9600	U.S.G.S.	Archeological Site	
MX-181-2/1	T4S,	R64E,	SE 1/4 Sec. 5 SW 1/4 Sec. 4, NE 1/4 Sec. 8, NW 1/4 Sec. 9	#34	Pahroc Spring SE	None	
MX-181-2/2	T4S,	R64E,	SW 1/4 Sec. 3, SE 1/4 Sec. 4	#34	Pahroc Spring SE and NE	MX-181-2/2-P1	Isolated flake; blue-grey chert
MX-181-2/3	T3S,	R64E,	SW 1/4 Sec. 34	#34	Pahroc Spring NE	None	
MX-181-2/4	T3S,	R64E,	NE 1/4 Sec. 33	#34	Pahroc Spring NE	None	
MX-181-2/5	T3S,	R64E,	SW 1/4 Sec. 35	#35	Pahroc Spring NE	None	
MX-181-2/6	T3S,	R64E,	NW 1/4 Sec. 27	#34	Pahroc Spring NE	None	
MX-181-2/6A*	T3S,	R64E,	NW 1/4 Sec. 27	#34	Pahroc Spring NE	None	
MX-181-2/7	T3S,	R64E,	SE 1/4 Sec. 26	#35	Pahroc Spring NE	None	
MX-181-2/8	T3S,	R64E,	NW 1/4 Sec. 26	#35	Pahroc Spring NE	None	
MX-181-2/9	T3S,	R64E,	NW 1/4 and NE 1/4 Sec. 23	#32	Pahroc Spring NE	None	
MX-181-2/9A*	T3S,	R64E,	NW 1/4 and NE 1/4 Sec. 23	#32	Pahroc Spring NE	None	
MX-181-2/10	T3S,	R64E,	NE 1/4 Sec. 15	#31	Pahroc Spring NE	None	
MX-181-2/11	T3S,	R64E,	NW 1/4 Sec. 24 SW 1/4 Sec. 13	#32	Pahroc Spring NE	None	
MX-181-2/12	T3S,	R64E,	NW 1/4 and SW 1/4 Sec. 11	#32	Pahroc Spring NE	None	
MX-181-2/13	T3S,	R64E,	NW 1/4 Sec. 12	#32	Pahroc Spring NE	MX-181-2/13-P1	Isolated flake; obsidian
MX-181-2/14	T3S,	R64E,	NW 1/4 Sec. 1	#32	Pahroc Spring NE	None	
MX-181-2/15	T2S,	R64E,	SE 1/4 Sec. 36	#29	Pahroc Spring NE	None	
MX-181-2/16	T2S,	R64E,	SW 1/4 Sec. 25	#29	Pahroc Spring NE	MX-181-2/16-P1	Isolated metate fragment
MX-181-2/17	T2S,	R64E,	NE 1/4 Sec. 26, SE 1/4 Sec. 23	#29	Deadman Spring SE	None	
MX-181-2/18	T2S,	R65E,	SW 1/4 Sec. 30	#29	Caliente NW	None	
MX-181-2/19	T2S,	R65E,	SE 1/4 Sec. 19	#29	The Bluffs	None	

AD-A113 185 ERTEC WESTERN INC LONG BEACH CA F/G 5/6
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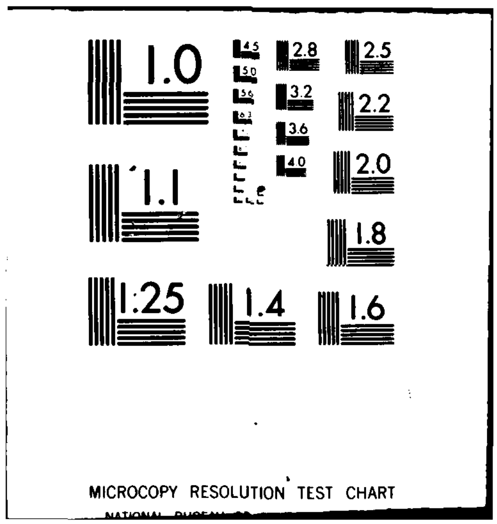
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CLUSTER 2 (Cont.)

Units	Legal Descriptions			Maps		Findings
Sample Unit No.	Twn	Range	Section	MX 1:9600	U.S.G.S.	Archeological Site
MX-181-2/20	T2S,	R64E,	SE 1/4 Sec. 13, NE 1/4 Sec. 24,	#29	Deadman Spring SE and The Bluffs	None
	T2S,	R65E,	NW 1/4 Sec. 19, SW 1/4 Sec. 18			
MX-181-2/21	T2S,	R65E,	NW 1/4 Sec. 18	#29	The Bluffs	None
MX-181-2/22	T2S,	R65E,	NW 1/4 Sec. 17, SW 1/4 Sec. 8	#29 #25	The Bluffs	None
MX-181-2/22A*	T2S,	R65E,	SW 1/4 and SE 1/4 Sec. 8	#25	The Bluffs	MX-181-2/22A(off)-P1 Isolated scraper; pink quartzite
MX-181-2/23	T2S,	R65E,	NW 1/4 and SW 1/4 Sec. 16	#39	The Bluffs	None
MX-181-2/23A*	T2S,	R65E,	NW 1/4 Sec. 16	#39	The Bluffs	MX-181-2/23A-P1 Isolated flake; brown chert MX-181-2/23A-P2 Isolated biface; obsidian

CLUSTER 3

Units	Legal Descriptions			Maps		Findings	
Sample Unit No.	Twn	Range	Section	MX 1:9600	U.S.G.S.	Archeological Site	
MX-181-3/1	T3S,	R63E,	NW 1/4 Sec.14	#30	Pahroc Spring	MX-181-3/1-P1	Lithic scatter; large low density
MX-181-3/1A*	T3S,	R63E,	NE 1/4 Sec. 15, NW 1/4 Sec. 14	#30	Pahroc Spring	MX-181-3/1A-P1	Lithic scatter; large low density
MX-181-3/2	T3S,	R63E,	SW 1/4 Sec. 12	#30	Pahroc Spring NE	MX-181-3/2-P1	Lithic scatter; large low density
MX-181-3/3	T3S,	R63E,	NE 1/4 Sec. 12, SE 1/4 Sec. 1	#30	Pahroc Spring NE	MX-181-3/3-P1	Lithic scatter; large low density
MX-181-3/4	T3S,	R64E,	SE 1/4 Sec. 6, NE 1/4 Sec. 7	#31	Pahroc Spring NE	MX-181-3/4-P1	Lithic scatter; large low density
MX-181-3/5	T3S,	R63E,	NE 1/4 Sec. 2	#30	Pahroc Spring	MX-181-3/5-P1	Lithic scatter/quarry; large, low density
						MX-181-3/5(off)-P1	Lithic scatter/quarry; large, low density
MX-181-3/5A*	T3S,	R63E,	SE 1/4 Sec. 14, NE 1/4 Sec. 23	#30	Pahroc Spring	None	
MX-181-3/6	T2S,	R63E,	NE 1/4 and SE 1/4 Sec. 36	#27	Pahroc Spring NE	MX-181-3/6-P1	Lithic scatter/quarry; large, low density
MX-181-3/7	T2S,	R63E,	SE 1/4 Sec. 26, SW 1/4 Sec. 25	#27	Pahroc Spring	MX-181-3/7-P1	Lithic scatter/quarry; large, low density
MX-181-3/8	T2S,	R63E,	SW 1/4 Sec. 24	#27	Deadman Spring SE	MX-181-3/8-P1	Lithic scatter/quarry; large, low density
MX-181-3/9	T2S,	R63E,	NW 1/4 and NE 1/4 Sec. 23	#27	Wheatgrass Spring	MX-181-3/9-P1	Lithic scatter/quarry; large, low density
MX-181-3/10	T2S,	R63E,	NE 1/4 Sec. 14	#27	Wheatgrass Spring	None	
MX-181-3/11	T2S,	R64E,	SE 1/4 Sec. 18	#28	Deadman Spring SE	MX-181-3/11-P1	Lithic scatter; large low density
MX-181-3/12	T2S,	R64E,	SW 1/4 Sec. 7	#24	Deadman Spring SE	MX-181-3/12-P1	Isolated flake; brown jasper
						MX-181-3/12-P2	Isolated flake; obsidian

CLUSTER 3 (Cont.)

Units	Legal Descriptions			Maps		Findings	
Sample Unit No.	Twn	Range	Section	MX 1:9600	U.S.G.S.	Archeological Site	
MX-181-3/13	T1S,	R63E,	SW 1/4 Sec. 35	#23	Wheatgrass Spring	None	
MX-181-3/14	T2S,	R63E,	NE 1/4 Sec. 11, SE 1/4 Sec. 2	#23	Wheatgrass Spring	None	
MX-181-3/14A*	T2S,	R63E,	NE 1/4 Sec. 11	#23	Wheatgrass Spring		
MX-181-3/15	T2S,	R64E,	SE 1/4 Sec. 6	#24	Deadman Spring SE	MX-181-3/15-P1	Isolated flake; tachylite
MX-181-3/16	T2S, T2S,	R63E, R64E,	NE 1/4 Sec. 1 NW 1/4 Sec. 6	#23 & #24	Deadman Spring SE	MX-181-3/16-P1	Lithic scatter; large low density
MX-181-3/17	T2S,	R64E,	SE 1/4 Sec. 5	#24	Deadman Spring SE	None	
MX-181-3/18	T1S,	R64E,	NW 1/4 Sec. 31	#24	Deadman Spring SE	None	
MX-181-3/19	T1S,	R64E,	SE 1/4 Sec. 32, SW 1/4 Sec. 33	#24	Deadman Spring SE	MX-181-3/19-P1	Isolated flake; white chert
MX-181-3/20	T1S,	R64E,	NW 1/4 Sec. 32	#24	Deadman Spring SE	MX-181-3/20-P1	Isolated shatter; brown chert
MX-181-3/21	T1S,	R64E,	NE 1/4 Sec. 29	#24	Deadman Spring SE	None	
MX-181-3/22	T1S,	R64E,	NE 1/4 Sec. 19	#19	Deadman Spring SE	None	
MX-181-3/23	T1S,	R64E,	NW 1/4 and SW 1/4 Sec. 17	#19	Deadman Spring SE	None	

CLUSTER 4

Units	Legal Descriptions			Maps		Findings	
Sample Unit No.	Twn	Range	Section	MX 1:9600	U.S.G.S.	Archeological Site	
MX-181-4/1	T2S,	R64E,	NW 1/4 Sec. 24 NE 1/4 Sec. 23	#29	Deadman Spring SE	None	
MX-181-4/1A*	T2S,	R64E,	NE 1/4 Sec. 23	#29	Deadman Spring SE	None	
MX-181-4/2	T2S,	R64E,	NW 1/4 Sec. 14	#29	Deadman Spring SE	MX-181-4/2-P1 MX-181-4/2-P2	Isolated Sevier pottery Temporary camp
MX-181-4/2A	T2S,	R64E,	NW 1/4 Sec. 14	#29	Deadman Spring SE	None	
MX-181-4/3	T2S,	R64E,	NE 1/4 and SE 1/4 Sec. 11	#25	Deadman Spring SE	MX-181-4/3-P1	Temporary camp
MX-181-4/3A	T2S,	R64E,	NE 1/4 Sec. 11	#25	Deadman Spring SE	None	
MX-181-4/4	T2S,	R64E,	NE 1/4 Sec. 12	#25	Deadman Spring SE	None	
MX-181-4/4A	T2S,	R64E,	NE 1/4 Sec. 12	#25	Deadman Spring SE	None	
MX-181-4/5	T2S,	R65E,	NW 1/4 Sec. 6	#25	The Bluffs	None	
MX-181-4/6	T1S,	R64E,	NW 1/4 Sec. 34, NE 1/4 Sec. 33	#24	Deadman Spring SE	MX-181-4/6-P1	Temporary camp
MX-181-4/7	T1S,	R64E,	NE 1/4 Sec. 34, SE 1/4 Sec. 27, & NW 1/4 Sec. 35	#24 #25	Deadman Spring SE	None	
MX-181-4/8	T1S,	R64E,	SE 1/4 Sec. 35	#25	Deadman Spring SE	None	
MX-181-4/9	T1S,	R64E,	SW 1/4 and SE 1/4 Sec. 36	#25	Deadman Spring SE	MX-181-4/9(off)-P1	Lithic scatter; small low density
MX-181-4/10	T1S,	R64E,	NE 1/4 and SE 1/4 Sec. 21	#20	Deadman Spring SE	None	
MX-181-4/11	T1S,	R64E,	NW 1/4 Sec. 26	#25	Deadman Spring SE	None	
MX-181-4/12	T1S, T1S,	R64E, R65E,	SE 1/4 Sec. 25 SW 1/4 Sec. 30	#25	Deadman Spring SE	None	
MX-181-4/13	T1S,	R64E,	NE 1/4 Sec. 22	#20	Deadman Spring SE	MX-181-4/13-P1 MX-181-4/13-P2	Lithic scatter; large low density Lithic scatter; small low density

CLUSTER 4 (Cont.)

Units	Legal Descriptions			Maps		Findings	
Sample Unit No.	Twn	Range	Section	MX 1:9600	U.S.G.S.	Archeological Site	
MX-181-4/14	T1S,	R64E,	NW 1/4 Sec. 25, SW 1/4 Sec. 24	#20 #25	Deadman Spring SE	MX-181-4/14-P1	Chipping station
MX-181-4/15	T1S,	R65E,	SE 1/4 Sec. 30	#25	The Bluffs	None	
MX-181-4/16	T1S,	R64E,	NW 1/4 Sec. 14	#20	Deadman Spring SE	None	
MX-181-4/17	T1S,	R64E,	NE 1/4 Sec. 24	#20	Deadman Spring SE	MX-181-4/17-P1	Temporary camp
MX-181-4/18	T1S,	R64E,	SE 1/4 Sec. 10	#20	Deadman Spring NE	None	
MX-181-4/19	T1S,	R64E,	NW 1/4 Sec. 13	#20	Deadman Spring SE	None	
MX-181-4/20	T1S,	R65E,	SE 1/4 Sec. 18, NE 1/4 Sec. 19	#21	The Bluffs	None	
MX-181-4/21	T1S,	R64E,	SE 1/4 Sec. 3, SW 1/4 Sec. 2	#20	Deadman Spring NE	None	
MX-181-4/22	T1S,	R64E,	NE 1/4 Sec. 12	#20	Deadman Spring NE	None	
MX-181-4/22A	T1S,	R64E,	NE 1/4 Sec. 12	#20	Deadman Spring NE	None	
MX-181-4/23	T1S,	R64E,	SE 1/4 Sec. 2, SW 1/4 Sec. 1	#20	Deadman Spring NE	None	

CLUSTER 5

Units	Legal Descriptions			Maps		Findings
Sample Unit No.	Twn	Range	Section	MX 1:9600	U.S.G.S.	Archeological Site
MX-181-5/1	T1N,	R64E,	SW 1/4 Sec. 26	#17	Deadman Spring NE	None
MX-181-5/2	T1N,	R64E,	NE 1/4 and SE 1/4 Sec. 35	#17	Deadman Spring NE	None
MX-181-5/3	T1N,	R64E,	NE 1/4 Sec. 36	#17	Ely Springs	None
MX-181-5/4	T1N,	R65E,	SW 1/4 and SE 1/4 Sec. 31	#18	Ely Springs	None
MX-181-5/5	T1S,	R65E,	NE 1/4 and NW 1/4 Sec. 7	#21	Ely Springs	None
MX-181-5/5A*	T1S,	R65E,	NE 1/4 Sec. 7	#21	Ely Springs	None
MX-181-5/6	T1S,	R65E,	NW 1/4 Sec. 17	#21	The Bluffs	None
MX-181-5/7	T1S,	R65E,	SW 1/4 Sec. 3	#21	Ely Springs	None
MX-181-5/8	T1S,	R65E,	SE 1/4 and SW 1/4 Sec. 4 NW 1/4 Sec. 9	#21	Ely Springs	MX-181-5/8-P1 Isolated Rose Spring Proj. Pt.; white chert
MX-181-5/9	T1S,	R65E,	SW 1/4 Sec. 9, SE 1/4 Sec. 8	#21	The Bluffs	None
MX-181-5/9A*	T1S,	R65E,	SW 1/4 Sec. 9, SE 1/4 Sec. 8	#21	The Bluffs	None
MX-181-5/10	T1S,	R65E,	SE 1/4 Sec. 16	#21	The Bluffs	None
MX-181-5/11	T1S,	R65E,	SE 1/4 Sec. 15	#21	The Bluffs	None
MX-181-5/12	T1S,	R65E,	NW 1/4 Sec. 23	#22	The Bluffs	None
MX-181-5/12A*	T1S,	R65E,	NW 1/4 Sec. 23	#22	The Bluffs	None
MX-181-5/13	T1S,	R65E,	SW 1/4 Sec. 21	#21	The Bluffs	None
MX-181-5/14	T1S,	R65E,	NE 1/4 and SE 1/4 Sec. 28	#26	The Bluffs	None
MX-181-5/15	T1S,	R65E,	NE 1/4 Sec. 27 NW 1/4 Sec. 26	#26	The Bluffs	None
MX-181-5/16	T1S,	R65E,	NW 1/4 and SW 1/4 Sec. 33	#26	The Bluffs	None

CLUSTER 5 (Cont.)

Units	Legal Descriptions	Maps		Findings	
Sample Unit No.	Twn Range Section	MX 1:9600	U.S.G.S.	Archeological Site	
MX-181-5/17	T2S, R65E, SE 1/4 Sec. 2	#26	The Bluffs	None	
MX-181-5/18	T2S, R65E, NW 1/4 Sec. 2 T1S, R65E, SW 1/4 Sec. 35	#26	The Bluffs	None	
MX-181-5/18A*	T2S, R65E, NW 1/4 Sec. 2 T1S, R65E, SW 1/4 Sec. 35	#26	The Bluffs	None	
MX-181-5/19	T1S, R65E, NE 1/4 and NW 1/4 Sec. 35	#26	The Bluffs	MX-181-5/19-H1	Historic ranching campsite
MX-181-5/19A*	T1S, R65E, NE 1/4 Sec. 35	#26	The Bluffs	MX-181-5/19A-P1	Isolated flake; gold chert
MX-181-5/20	T1S, R65E, SE 1/4 Sec. 25	#26	The Bluffs	None	
MX-181-5/20A*	T1S, R65E, SE 1/4 Sec. 25	#26	The Bluffs	None	
MX-181-5/21	T1S, R65E, NW 1/4 Sec. 24	#22	The Bluffs	MX-181-5/21-P1	Isolated flake; light tan quartzite
MX-181-5/22	T1S, R65E, NE 1/4 Sec. 13	#22	The Bluffs	None	
MX-181-5/22A	T1S, R65E, NE 1/4 Sec. 13	#22	The Bluffs	None	
MX-181-5/23	T1S, R66E, NW 1/4 Sec. 7 T1S, R65E, NE 1/4 Sec. 12	#22	Ely Springs	None	

CLUSTER 6

Units	Legal Descriptions			Maps		Findings	
Sample Unit No.	Twn	Range	Section	MX 1:9600	U.S.G.S.	Archeological Site	
MX-181-6/1	T1S,	R63E,	NE 1/4 Sec. 34	#23	Wheatgrass Spring	MX-181-6/1-P1	Lithic scatter/quarry; large low density
MX-181-6/1A*	T1S,	R63E,	NE 1/4 Sec. 34	#23	Wheatgrass Spring	MX-181-6/1A-P1	Lithic scatter/quarry; large low density
MX-181-6/1B*	T1S,	R63E,	NE 1/4 Sec. 34, SE 1/4 Sec. 27	#23	Wheatgrass Spring	MX-181-6/1B-P1	Lithic scatter/quarry; large low density
MX-181-6/1C*	T1S,	R63E,	NE 1/4 Sec. 34, SE 1/4 Sec. 27	#23	Wheatgrass Spring	MX-181-6/1C-P1	Lithic scatter/quarry; large low density
MX-181-6/2	T1S,	R63E,	SE 1/4 Sec. 26	#23	Wheatgrass Spring	MX-181-6/2-P1	Lithic scatter; large low density
MX-181-6/2A*	T1S,	R63E,	SE 1/4 and NE 1/4 Sec. 26	#23	Wheatgrass Spring	MX-181-6/2-P1	Lithic scatter; large low density
MX-181-6/3	T1S,	R63E,	NE 1/4 and SE 1/4 Sec. 25	#23	Deadman Spring SE	MX-181-6/3-P1 MX-181-6/3-P2	Isolated core; obsidian Isolated flake; obsidian
MX-181-6/4	T1S,	R63E,	NE 1/4 and SE 1/4 Sec. 24	#19	Deadman Spring SE	None	
MX-181-6/5	T1S,	R63E,	SW 1/4 Sec. 13	#19	Deadman Spring SE	None	
MX-181-6/6	T1S,	R63E,	SE 1/4 Sec. 12	#19	Deadman Spring SE	MX-181-6/6-P1	Lithic scatter; large low density
MX-181-6/7	T1S,	R63E,	NE 1/4 Sec. 11	#19	Deadman Spring	None	
MX-181-6/8	T1S,	R64E,	SE 1/4 Sec. 7	#19	Deadman Spring SE & NE	None	
MX-181-6/9	T1S,	R64E,	SW 1/4 Sec. 5, SE 1/4 Sec. 6	#19	Deadman Spring NE	MX-181-6/9-P1	Isolated cortex flake; yellow chert
MX-181-6/10	T1N,	R63E,	SE 1/4 Sec. 36	#16	Deadman Spring NE	MX-181-6/10-P1	Lithic scatter; large low density
MX-181-6/11	T1N,	R64E,	SW 1/4 Sec. 30	#16	Deadman Spring NE	MX-181-6/11-P1	Isolated flake; black obsidian
MX-181-6/12	T1N,	R64E,	SW 1/4 Sec. 29	#16	Deadman Spring NE	None	
MX-181-6/13	T1N,	R64E,	SE 1/4 Sec. 20	#16	Deadman Spring NE	None	

CLUSTER 6 (Cont.)

Units	Legal Descriptions			Maps		Findings	
Sample Unit No.	Twn	Range	Section	MX 1:9600	U.S.G.S.	Archeological Site	
MX-181-6/14	T1N,	R64E,	NE 1/4 Sec. 19, NW 1/4 Sec. 20	#16	Deadman Spring NE	MX-181-6/14-P1	Lithic scatter; large, low density
MX-181-6/14A*	T1N,	R64E,	NE 1/4 Sec. 19, NW 1/4 Sec. 20	#16	Deadman Spring NE	MX-181-6/14A-P1	Isolated flake; yellow-white chert
MX-181-6/15	T1N,	R64E,	NW 1/4 Sec. 17	#16	Deadman Spring NE	MX-181-6/15-P1	Lithic scatter; large low density
MX-181-6/16	T1N,	R64E,	NE 1/4 Sec. 7	#12	Deadman Spring NE	MX-181-6/16-P1	Lithic scatter; large low density
MX-181-6/17	T1N,	R63E,	SE 1/4 Sec. 12	#12	Deadman Spring NE	MX-181-6/17-P1	Lithic scatter; large low density
MX-181-6/18	T1N,	R64E,	NW 1/4 and SW 1/4 Sec. 5	#12	Deadman Spring NE	MX-181-6/18-P1	Lithic scatter; large low density
MX-181-6/18A*	T1N,	R64E,	NW 1/4 and SW 1/4 Sec. 5 NE 1/4 and SE 1/4 Sec. 6	#12	Deadman Spring NE	MX-181-6/18A-P1	Lithic scatter; large low density
MX-181-6/19	T2N,	R64E,	SW 1/4 and SE 1/4 Sec. 31	#12	Deadman Spring NE	MX-181-6/19-P1	Lithic scatter/quarry; large low density
MX-181-6/20	T2N,	R64E,	SE 1/4 Sec. 30	#12	Coyote Spring	None	
MX-181-6/21	T2N,	R64E,	SE 1/4 Sec. 29	#12	Coyote Spring	MX-181-6/21-P1	Isolated flake; yellow chert
MX-181-6/22	T2N,	R64E,	SW 1/4 Sec. 21	#9	Coyote Spring	None	
MX-181-6/23	T2N,	R64E,	NE 1/4 Sec. 20 SE 1/4 Sec. 17	#8	Coyote Spring	None	

CLUSTER 7

Units	Legal Descriptions			Maps		Findings	
Sample Unit No.	Twn	Range	Section	MX 1:9600	U.S.G.S.	Archeological Site	
MX-181-7/1	T1S,	R64E,	NW 1/4 Sec. 16	#20	Deadman Spring SE	MX-181-7/1-P1	Lithic scatter; large low density
MX-181-7/2	T1S,	R64E,	NE 1/4 Sec. 9	#20	Deadman Spring NE	MX-181-7/2-P1	Temporary camp
MX-181-7/3	T1S,	R64E,	SW 1/4 Sec. 4, SE 1/4 Sec. 5	#19 & #20	Deadman Spring NE	MX-181-7/3-P1	Isolated flake; yellow quartzite
MX-181-7/4	T1N,	R64E,	NE 1/4 and SE 1/4 Sec. 32	#16	Deadman Spring NE	None	
-181-7/5	T1N,	R64E,	NE 1/4 Sec. 33	#17	Deadman Spring NE	None	
MX-181-7/6	T1N,	R64E,	NW 1/4 and SW 1/4 Sec. 27	#17	Deadman Spring NE	None	
MX-181-7/7	T1N,	R64E,	SW 1/4 and SE 1/4 Sec. 21	#17	Deadman Spring NE	None	
-181-7/8	T1N,	R64E,	SE 1/4 Sec. 16	#17	Deadman Spring NE	MX-181-7/8-P1	Isolated flake; orange chert
MX-181-7/9	T1N,	R64E,	SE 1/4 Sec. 15	#17	Deadman Spring NE	None	
MX-181-7/10	T1N,	R64E,	SW 1/4 Sec. 11	#13	Deadman Spring NE	None	
MX-181-7/11	T1N,	R64E,	NE 1/4 Sec. 10, SE 1/4 Sec. 3	#13	Deadman Spring NE	None	
MX-181-7/12	T1N,	R64E,	NW 1/4 Sec. 2, NE 1/4 Sec. 3	#13	Deadman Spring NE	None	
MX-181-7/13	T1N,	R64E,	NE 1/4 Sec. 2, NW 1/4 Sec. 1	#13	Deadman Spring NE	None	
	T2N,	R64E,	SE 1/4 Sec. 35, SW 1/4 Sec. 36				
MX-181-7/14	T2N,	R64E,	NW 1/4 Sec. 36	#13	Ely Spring	MX-181-7/14-P1	Isolated flake; gold chert
MX-181-7/15	T2N,	R64E,	NE 1/4 Sec. 26	#13	Coyote Spring	None	
MX-181-7/16	T2N,	R64E,	NW 1/4 Sec. 24	#9	Coyote Spring	None	
MX-181-7/17	T2N,	R64E,	SW 1/4 Sec. 22	#9	Coyote Spring	None	
MX-181-7/18	T2N,	R64E,	NE 1/4 Sec. 27	#13	Coyote Spring	None	

CLUSTER 7 (Cont.)

Units	Legal Descriptions			Maps		Findings
Sample Unit No.	Twn	Range	Section	MX 1:9600	U.S.G.S.	Archeological Site
MX-181-7/19	T2N,	R64E,	NE and NW 1/4 Sec. 34	#13	Deadman Spring NE	None
MX-181-7/20	T2N,	R64E,	NW 1/4 Sec. 33	#13	Deadman Spring NE	None
MX-181-7/21	T1N,	R64E,	NW 1/4 Sec. 4	#13	Deadman Spring NE	None
MX-181-7/22	T1N,	R64E,	NE 1/4 Sec. 9	#13	Deadman Spring NE	MX-181-7/22(off)-P1 Isolated biface; pink and white quartzite
MX-181-7/23	T1N,	R64E,	NW 1/4 Sec. 16	#17	Deadman Spring NE	None

CLUSTER 8

Units	Legal Descriptions			Maps		Findings
Sample Unit No.	Twn	Range	Section	MX 1:9600	U.S.G.S.	Archeological Site
MX-181-8/1	T1N,	R64E,	SE 1/4 and SW 1/4 Sec. 23	#17	Deadman Spring NE	MX-181-8/1-P1 Temporary camp
MX-181-8/2	T1N,	R64E,	SE 1/4 and SW 1/4 Sec. 24	#17	Ely Springs	None
MX-181-8/3	T1N,	R65E,	SW 1/4 and NW 1/4 Sec. 30	#18	Ely Springs	None
MX-181-8/4	T1N, T1N,	R64E, R65E,	SE 1/4 Sec. 25 & SW 1/4 Sec. 29 SE 1/4 Sec. 30	#17 #18	Ely Springs	MX-181-8/4-P1 Milling Station
MX-181-8/5	T1N,	R64E,	SE 1/4 Sec. 13	#17	Ely Springs	None
MX-181-8/6	T1N,	R65E,	SW 1/4 Sec. 20	#18	Ely Springs	None
MX-181-8/7	T1N,	R64E,	NW 1/4 Sec. 13	#17	Deadman Spring NE	MX-181-8/7-P1 Temporary camp
MX-181-8/8	T1N,	R65E,	SE 1/4 Sec. 18	#18	Ely Springs	None
MX-181-8/9	T1N,	R64E,	NE 1/4 Sec. 12	#13	Ely Springs	None
MX-181-8/10	T1N,	R65E,	SW 1/4 Sec. 8	#14	Ely Springs	None
MX-181-8/11	T1N,	R65E,	SE 1/4 Sec. 6 NE 1/4 Sec. 7	#14	Ely Springs	MX-181-8/11-P1 Isolated biface; reddish quartzite
MX-181-8/12	T1N,	R65E,	NE 1/4 Sec. 8, NW 1/4 Sec. 9	#14	Ely Springs	MX-181-8/12-P1 Isolated flake; tachylite MX-181-8/12(off)-P1 Isolated biface; pink grey quartzite MX-181-8/12(off)-P2 Isolated flake; tachylite
MX-181-8/13	T1N,	R65E,	NE 1/4 Sec. 6	#14	Ely Springs	None
MX-181-8/14	T1N, T2N,	R65E, R65E,	NE 1/4 Sec. 5 SE 1/4 Sec. 32	#14	Ely Springs	MX-181-8/14(off)-H1 Historic section corner MX-181-8/14-P1 Isolated flake; red-brown chert
MX-181-8/15	T2N,	R65E,	NW 1/4 Sec. 31	#14	Ely Springs	None

CLUSTER 8 (Cont.)

Units	Legal Descriptions			Maps		Findings
Sample Unit No.	Twn	Range	Section	MX 1:9600	U.S.G.S.	Archeological Site
MX-181-8/16	T2N,	R65E,	SW 1/4 Sec. 27	#14	Bristol Well	None
MX-181-8/17	T2N,	R65E,	SW 1/4 Sec. 22	#10	Bristol Well	None
MX-181-8/18	T2N,	R65E,	SW 1/4 Sec. 23	#11	Bristol Well	None
MX-181-8/18A*	T2N,	R65E,	SW 1/4 Sec. 23	#11	Bristol Well	None
MX-181-8/19	T2N,	R65E,	SE 1/4 Sec. 14	#11	Bristol Well	None
MX-181-8/19A*	T2N,	R65E,	SE 1/4 Sec. 14	#11	Bristol Well	None
MX-181-8/20	T2N,	R65E,	SW 1/4 Sec. 35	#15	Ely Springs	None
MX-181-8/21	T1N,	R65E,	NE 1/4 Sec. 4	#14	Ely Springs	None
MX-181-8/21A*	T1N,	R65E,	NE 1/4 Sec. 4	#14	Ely Springs	None
MX-181-8/22	T1N,	R65E,	NE 1/4 and	#14	Ely Springs	None
			SE 1/4 Sec. 3			
MX-181-8/22A*	T1N,	R65E,	NE 1/4 and			None
			SE 1/4 Sec. 3	#14	Ely Springs	None
MX-181-8/23	T2N,	R65E,	SE 1/4 Sec. 15	#10	Bristol Well	None

CLUSTER 9

Units	Legal Descriptions			Maps		Findings	
Sample Unit No.	Twn	Range	Section	MX 1:9600	U.S.G.S.	Archeological Site	
MX-181-9/1	T2N,	R65E,	NE 1/4 Sec. 29	#14	Bristol Well	None	
MX-181-9/2	T2N,	R65E,	NE 1/4 Sec. 30	#14	Bristol Well	None	
MX-181-9/3	T2N,	R65E,	NW 1/4 Sec. 19	#10	Bristol Well	None	
MX-181-9/4	T2N,	R65E,	NE 1/4 Sec. 18	#10	Bristol Well	MX-181-9/4-P1	Lithic scatter; large low density
MX-181-9/5	T2N,	R65E,	SW 1/4 Sec. 7	#9	Bristol Well	MX-181-9/5-P1	Isolated flake; grey chert
	T2N,	R64E,	SE 1/4 Sec. 12	#10		MX-181-9/5-P2	Chipping circle
MX-181-9/6	T2N,	R64E,	SE 1/4 Sec. 11	#9	Coyote Spring	MX-181-9/6-P1	Isolated scraper; reddish-brown/black quartzite
MX-181-9/7	T2N,	R64E,	SW 1/4 Sec. 2	#9	Coyote Spring	None	
MX-181-9/8	T2N,	R64E,	NE 1/4 Sec. 2	#9	Coyote Spring	None	
MX-181-9/9	T3N,	R64E,	NW 1/4 Sec. 35	#5	Coyote Spring	None	
MX-181-9/10	T3N,	R64E,	NW 1/4 Sec. 34	#5	Coyote Spring	None	
MX-181-9/11	T3N,	R64E,	SE 1/4 and SW 1/4 Sec. 28	#5	Coyote Spring	None	
MX-181-9/12	T3N,	R64E,	SE 1/4 Sec. 21	#5	Coyote Spring	None	
MX-181-9/13	T3N,	R64E,	SW 1/4 Sec. 16	#5	Coyote Spring	None	
MX-181-9/14	T3N,	R64E,	NE 1/4 Sec. 16	#2	Bailey Wash	MX-181-9/14-P1	Isolated biface; chert
			SE 1/4 Sec. 9	#5			
MX-181-9/15	T3N,	R64E,	SE 1/4 Sec. 10	#2	Bailey Wash	None	
MX-181-9/16	T3N,	R64E,	SW 1/4 Sec. 14	#5	Coyote Spring	MX-181-9/16-P1	Lithic scatter; small low density
MX-181-9/17	T3N,	R64E,	SE 1/4 Sec. 22	#5	Coyote Spring	None	
MX-181-9/18	T3N,	R64E,	NE 1/4 and NW 1/4 Sec. 26	#5	Coyote Spring	None	
MX-181-9/19	T3N,	R64E,	NE 1/4 and NW 1/4 Sec. 25	#5	Bristol Well	MX-181-9/19-P1	Chipping circle
MX-181-9/20	T3N,	R65E,	SW 1/4 Sec. 30	#6	Bristol Well	None	
MX-181-9/21	T3N,	R64E,	SE 1/4 Sec. 36	#5	Bristol Well	None	
MX-181-9/22	T2N,	R65E,	SW 1/4 Sec. 6	#10	Bristol Well	None	
MX-181-9/23	T2N,	R65E,	SW 1/4 and SE 1/4 Sec. 17	#10	Bristol Well	None	
MX-181-9/23A*	T2N,	R65E	SE 1/4 Sec. 17	#10	Bristol Well	None	

CLUSTER 10

Units	Legal Descriptions			Maps		Findings
Sample Unit No.	Twn	Range	Section	MX 1:9600	U.S.G.S.	Archeological Site
MX-181-10/1	T2N,	R64E,	SE 1/4 Sec. 14	#9	Coyote Spring	None
MX-181-10/2	T2N,	R64E,	SE 1/4 Sec. 15	#9	Coyote Spring	MX-181-10/2(off)-P1 Isolated flake; grey chert
MX-181-10/3	T2N,	R64E,	SE 1/4 Sec. 9, SW 1/4 Sec. 10	#9	Coyote Spring	None
MX-181-10/4	T2N,	R64E,	NW 1/4 Sec. 16 NE 1/4 Sec. 17	#8 &#9	Coyote Spring	None
MX-181-10/5	T2N,	R63E,	SW 1/4 Sec. 12	#8	Coyote Spring	None
MX-181-10/6	T2N,	R64E,	SW 1/4 Sec. 7	#8	Coyote Spring	None
MX-181-10/7	T2N,	R64E,	NW 1/4 Sec. 8	#8	Coyote Spring	None
MX-181-10/8	T2N,	R64E,	SE 1/4 Sec. 4	#9	Coyote Spring	MX-181-10/8-P1 Temporary camp
MX-181-10/9	T2N,	R63E,	SE 1/4 Sec. 1	#8	Coyote Spring	MX-181-10/9-P1 Isolated flake; white quartzite
MX-181-10/10	T2N,	R64E,	NE 1/4 Sec. 5	#8	Coyote Spring	None
MX-181-10/11	T3N,	R64E,	SW 1/4 Sec. 32	#4	Coyote Spring	None
MX-181-10/12	T3N,	R64E,	SE 1/4 and SW 1/4 Sec. 29	#4	Coyote Spring	MX-181-10/12-P1 Isolated core; grey-brown mottled chert
MX-181-10/12A*	T3N,	R64E,	SE 1/4 and SW 1/4 Sec. 29	#4	Coyote Spring	MX-181-10/12-P1 Isolated core; pinkish mottled chert
MX-181-10/13	T3N,	R64E,	SE 1/4 Sec. 19 NE 1/4 Sec. 30	#4	Coyote Spring	None
MX-181-10/14	T3N,	R63E,	NE 1/4 Sec. 26	#4	Coyote Spring	None
MX-181-10/15	T3N,	R63E,	NE 1/4 Sec. 25	#4	Coyote Spring	None
MX-181-10/16	T3N,	R63E,	NW 1/4 Sec. 24	#4	Coyote Spring	None
MX-181-10/16A*	T3N,	R63E,	NW 1/4 Sec. 24	#4	Coyote Spring	None
MX-181-10/17	T3N,	R63E,	SE 1/4 and NE 1/4 Sec. 13	#4	Coyote Spring	None
MX-181-10/18	T3N,	R64E,	NE 1/4 and NW 1/4 Sec. 18	#4	Coyote Spring	None
MX-181-10/19	T3N,	R63E,	SE 1/4 Sec. 11	#1	Bailey Wash	MX-181-10/19-P1 Isolated flake; pink chert
MX-181-10/20	T3N,	R64E,	NW 1/4 and SW 1/4 Sec. 6	#1	Bailey Wash	None
MX-181-10/21	T4N,	R63E,	SW 1/4 Sec. 36	#1	Bailey Wash	None
MX-181-10/22	T3N,	R63E,	NW 1/4 Sec. 11	#1	Silver King Mtn.	None
MX-181-10/23	T3N,	R63E,	NW 1/4 Sec. 2	#1	Silver King Mtn.	None

REMOTE SURVEILLANCE SITES

Units	Legal Descriptions		Maps		Findings
Sample Unit No.	Twn Range	Section	MX 1:9600	U.S.G.S.	Archeological Site
RSS No.					
MX-181-RSS/1	T3S, R64E,	NE 1/4 Sec. 9	#31	Pahroc Spring NE	None
MX-181-RSS/2	T1S, R64E,	NW 1/4 Sec. 19	#19	Deadman Spring SE	None
MX-181-RSS/3	T1S, R65E,	NE 1/4 Sec. 19	#21	The Bluffs	None
MX-181-RSS/4	T1N, R65E,	NW 1/4 and SW 1/4 Sec. 6	#14	Ely Springs	None
MX-181-RSS/5	T2N, R64E,	NW 1/4 Sec. 16	#9	Coyote Spring	None

CLUSTER MAINTENANCE FACILITIES

Units	Legal Descriptions			Maps		Findings	
Sample Unit No.	Twn	Range	Section	MX 1:9600	U.S.G.S.	Archeological Site	
CMF No.							
MX-181-CMF/1	T3S,	R64E,	SE 1/4 Sec. 8, SW 1/4 Sec. 9	#31	Pahroc Spring NE	None	
MX-181-CMF/2	T3S,	R64E,	NW 1/4 Sec. 13, NE 1/4 Sec. 14	#32	Pahroc Spring NE	None	
MX-181-CMF/3	T2S,	R64E,	NW 1/4 and SW 1/4 Sec. 7	#24	Deadman Spring SE	None	
MX-181-CMF/4	T1S,	R64E,	SW 1/4 Sec. 23	#20	Deadman Spring SE	None	
MX-181-CMF/5	T1S,	R65E,	SW 1/4 Sec. 16, NW 1/4 Sec. 21	#21	The Bluffs	None	
MX-181-CMF/6	T1N,	R64E,	SW 1/4 Sec. 31	#16	Deadman Spring NE	MX-181-CMF/6-P1	Isolated flake; gold brown chert
						MX-181-CMF/6-P2	Isolated flake; gold brown chert
MX-181-CMF/7	T1N,	R64E,	NW 1/4 Sec. 11	#13	Deadman Spring NE	MX-181-CMF/7-P1	Lithic scatter; small low density
						MX-181-CMF/7-P2	Lithic scatter; large low density
MX-181-CMF/8	T1N,	R65E,	NE 1/4 and NW 1/4 Sec. 5	#14	Ely Spring	None	
MX-181-CMF/8A	T1N,	R65E,	NE 1/4 and NW 1/4 Sec. 5	#14	Ely Spring	MX-181-CMF/8A-P1	Isolated core; red and gold chert
MX-181-CMF/9	T2N,	R64E,	NW 1/4 and SW 1/4 Sec. 2	#9	Coyote Spring	MX-181-CMF/9-P1	Isolated flake; red jasper
						MX-181-CMF/9-P2	Isolated core; reddish-brown chert
MX-181-CMF/10	T2N,	R64E,	NW 1/4 Sec. 5	#8	Coyote Spring	None	

APPENDIX D

APPENDIX D

ROADS (DTN AND CLUSTER 2) SUMMARY TABLE

Units	Legal Descriptions			Maps		Findings
Sample Unit No.	Twn	Range	Section	MX 1:9600	U.S.G.S.	Archeological Site
MX-181-DTN-JG1	T2S,	R64E,	SW 1/4 Sec. 16	#28	Deadman Spring SE	Lithic scatter; large low density
MX-181-DTN-JG2	T2S,	R64E,	NW 1/4 Sec. 21	#28	Deadman Spring SE	Lithic scatter; large low density
MX-181-DTN-JG3	T2S,	R64E,	SW 1/4 Sec. 21	#28	Deadman Spring SE	Lithic scatter; large low density
MX-181-DTN-JG4	T2S,	R64E,	NW 1/4 Sec. 28	#28	Deadman Spring SE	Isolated Elko projectile point; yellow/gold chert
MX-181-DTN-JG5	T2S,	R64E,	NW 1/4 Sec. 28	#28	Pahroc Spring NE	Isolated flake; orange/black mottled chert
MX-181-DTN-JG6	T3S,	R64E,	SW 1/4 Sec. 10	#31	Pahroc Spring NE	Isolated flake; black chert
MX-181-DTN-EB1	T3N,	R64E,	NW 1/4 Sec. 33	#5	Coyote Spring	Lithic scatter; large low density
MX-181-DTN-EB2	T2N,	R64E,	SE 1/4 Sec. 24	#9	Bristol Well	Lithic scatter; small low density
MX-181-DTN-EB3	T1N,	R64E,	NW 1/4 Sec. 1	#13	Ely Springs	Milling station
MX-181-DTN-EB4	T1N,	R64E,	SW 1/4 Sec. 1	#13	Deadman Spring NE	Isolated flake; yellow mottled chert
MX-181-DTN-EB5	T1N,	R64E,	NW 1/4 Sec. 23	#17	Deadman Spring NE	Isolated flake; yellow chert
MX-181-DTN-EB6	T2S,	R64E,	NW 1/4 Sec. 16	#28	Deadman Spring SE	Lithic scatter; large low density
MX-181-DTN-EB7	T2S,	R64E,	NW 1/4 Sec. 21	#28	Deadman Spring SE	Isolated flake; grey chert
MX-181-DTN-EB8	T2S,	R64E,	SW 1/4 Sec. 21	#5	Deadman Spring SE	Isolated flake; black chert
MX-181-DTN-EB9	T3S,	R64E,	NE 1/4 Sec. 4	#28	Pahroc Spring NE	Large temporary campsite complex
			NW 1/4 Sec. 3	#31	Deadman Spring SE	
	T2S,	R64E	SW 1/4 and SE 1/4 Sec. 21 NW 1/4, NE 1/4, and SE 1/4 Sec. 28 NE 1/4 and SE 1/4 Sec. 33			
MX-181-DTN-EB10	T3S,	R64E,	NW 1/4 Sec. 33	#34	Pahroc Spring NE	Isolated flake; yellow quartzite
MX-181-DTN-EB11	T3S,	R64E,	SW 1/4 Sec. 3	#31	Pahroc Spring NE	Temporary camp
MX-181-DTN-EB12	T3S,	R64E,	SW 1/4 Sec. 3	#31	Pahroc Spring NE	Isolated biface; black chert
MX-181-DTN-AM1	T2N,	R64E,	SW 1/4 Sec. 13	#9	Coyote Spring	Isolated flake; translucent grey obsidian

ROADS (DTN AND CLUSTER 2) SUMMARY TABLE (Cont.)

Units	Legal Descriptions			Maps		Findings
Sample Unit No.	Twn	Range	Section	MX 1:9600	U.S.G.S.	Archeological Site
MX-181-DTN-AM2	T2N,	R64E,	NW 1/4 Sec. 24	#9	Bristol Well	Isolated flake; white chert
MX-181-DTN-AM3	T1N,	R64E,	SW 1/4 Sec. 34	#17	Deadman Spring NE	Isolated biface; black chert
MX-181-DTN-AM4	T1S,	R64E,	NW 1/4 Sec. 10	#24	Deadman Spring NE	Lithic scatter; large low density
MX-181-DTN-AM5	T1S,	R64E,	SW 1/4 Sec. 10	#20	Deadman Spring SE	Isolated flake; yellow chert
MX-181-DTN-AM6	T1S,	R64E,	SW 1/4 Sec. 10	#20	Deadman Spring SE	Isolated flake; black chert
MX-181-DTN-AM7	T1S,	R64E,	NW 1/4 Sec. 21	#20	Deadman Spring SE	Lithic scatter; large low density
MX-181-DTN-AM8	T1S,	R64E,	SW 1/4 Sec. 21	#20	Deadman Spring SE	Lithic scatter; large low density
MX-181-DTN-AM9	T1S,	R64E,	SW 1/4 Sec. 21	#20	Deadman Spring SE	Isolated flake; orange chert
MX-181-DTN-AM10	T1S,	R64E,	NW 1/4 Sec. 28	#24	Deadman Spring SE	Isolated flake; translucent pink chert
MX-181-DTN-AM11	T1S,	R64E,	NW 1/4 Sec. 28	#24	Deadman Spring SE	Isolated flake; white chert
MX-181-DTN-AM12	T1S,	R64E,	NW 1/4 Sec. 33	#24	Deadman Spring SE	Milling station (metate)
MX-181-DTN-AM13	T1S,	R64E,	SW 1/4 Sec. 33	#24	Deadman Spring SE	Isolated flake; black and orange banded chert
MX-181-DTN-AM14	T2S,	R64E,	NW 1/4 Sec. 4	#24	Deadman Spring SE	Isolated flake; gold chert
MX-181-DTN-AM15	T2S,	R64E,	SW 1/4 Sec. 4	#24	Deadman Spring SE	Isolated flake; white chert
MX-181-DTN-AMH1	T3S,	R64E,	SW 1/4 and NW 1/4 Sec. 3 SE 1/4 and NE 1/4 Sec. 4	#31	Pahroc Spring NE	1882 historic section corner
MX-181-DTN-AMH2	T3S,	R64E,	SW 1/4 Sec. 3	#31	Pahroc Spring NE	Isolated cowbell
MX-181-DTN-AMH3	T4S,	R64E,	NE 1/4 Sec. 5	#34	Pahroc Spring NE	Isolated bottle; dark grey glass
MX-181-C2/ROAD-P1	T2S,	R65E,	SW 1/4 Sec. 31	#29	Caliente NW	Isolated flake; brown/white chert
MX-181-C2/ROAD-P2	T2S,	R64E,	NW 1/4 Sec. 25	#29	Pahroc Spring NE	Isolated flake; gold chert
MX-181-C2/ROAD-P3	T2S,	R64E,	NW 1/4 Sec. 25	#29	Pahroc Spring NE	Temporary camp
MX-181-C2/ROAD-P4	T2S,	R64E,	NE 1/4 Sec. 26	#29	Deadman Spring SE	Isolated flake; red chert
MX-181-C2/ROAD-P5	T2S,	R65E,	SE 1/4 Sec. 17	#29	The Bluffs	Isolated flake; white chert
MX-181-C2/ROAD-P6	T2S,	R65E,	SE 1/4 Sec. 17	#29	The Bluffs	Isolated biface; black obsidian
MX-181-C2/ROAD-H1	T2S,	R64E,	SE 1/4 Sec. 36	#29	Pahroc Spring NE	Isolated tin can; hole-in-top

KEY TO ABBREVIATIONS CONTAINED IN APPENDICES E, F, G, H

VEGETATION

LR	Little rabbitbrush
WF	Winterfat
SH	Spiny hopsage
4-SB	Four-winged saltbrush
Bud	Budsage
HB	Horsebrush
GW	Greasewood
Shad	Shadscale
GM	Gray Molly
SW	Suaeda
Grass	Galetta grass
BS	Big sage
MT	Mormon tea
SS	Small sage
CDS	Cold desert shrub

LANDFORM

Fan	Alluvial fan
AP	Alluvial plain
Shore	Shoreline feature of extinct lake

SITE TYPE

IF	Isolated find
H	Historic
LS	Lithic scatter
MS	Milling station
LS/Q	Lithic scatter/quarry
TC	Temporary camp
CS	Chipping station
HC	Historic campsite

APPENDIX E

APPENDIX E

SAMPLE UNITS AND ENVIRONMENTAL VARIABLES

SU No.	Aspect	Water*	Vegetation	Landform	Site Type
Cluster 1					
MX-181-1/1	SE	10,450	LR	fan	IF
MX-181-1/2	E	9,332	WF	fan	-
MX-181-1/3	SE	8,850	LR	fan	-
MX-181-1/3A**	SE	10,000	LR	fan	-
MX-181-1/4	E	9,250	WF	fan	-
MX-181-1/5	E	10,450	LR	fan	-
MX-181-1/6	E	8,530	LR	AP	-
MX-181-1/7	E	8,850	LR	AP	-
MX-181-1/8	E	10,000	LR	AF	-
MX-181-1/9	E	8,045	SH	fan	LS
MX-181-1/10	E	10,000	LR	AP	-
MX-181-1/11	E	10,458	LR	fan	-
MX-181-1/12	NE	9,650	4-SB	AP	-
MX-181-1/13	E	8,850	LR	AP	IF
MX-181-1/14	NE	9,650	4-SB	AP	H 1/4 corner
MX-181-1/15	E	10,000	WF	AP	IF IF
MX-181-1/16	E	10,300	LR	AP	IF
MX-181-1/17	E	8,850	LR	AP	-
MX-181-1/18	E	7,401	LR	AP	LS

* Distance to water given in meters.
** Overlapping unit.

SAMPLE UNITS AND ENVIRONMENTAL VARIABLES (Cont.)

SU No.	Aspect	Water*	Vegetation	Landform	Site Type
Cluster 1 (Cont.)					
MX-181-1/19	E	6,640	LR	fan	LS
MX-181-1/20	E	6,034	SH	fan	IF
MX-181-1/21	E	8,045	LR	AP	-
MX-181-1/22	E	4,990	SH	fan	Locus LS
MX-181-1/23	E	7,650	LR	AP	LS
Cluster 2					
MX-181-2/1	NW	6,640	SH	fan	-
MX-181-2/2	NW	5,632	SH	fan	IF
MX-181-2/3	NW	6,640	SH	fan	-
MX-181-2/4	N	8,300	Bud	AP	-
MX-181-2/5	NW	5,630	HB	fan	-
MX-181-2/6	N	9,130	WF	AP	-
MX-181-2/6A**	N	8,850	WF	AP	-
MX-181-2/7	NW	6,640	LR	fan	-
MX-181-2/8	NW	8,045	WF	AP	-
MX-181-2/9	NW	6,920	WF	AP	-
MX-181-2/9A**	NW	6,436	WF	AP	-
MX-181-2/10	N	8,045	WF	AP	-
MX-181-2/11	NW	5,150	WF	AP	-
MX-181-2/12	N	8,050	WF	AP	-

* Distance to water given in meters.
** Overlapping unit.

SAMPLE UNITS AND ENVIRONMENTAL VARIABLES (Cont.)

SU No.	Aspect	Water*	Vegetation	Landform	Site Type
Cluster 2 (Cont.)					
MX-181-2/13	NW	6,436	Shad	AP	IF
MX-181-2/14	NW	6,760	GW	playa	-
MX-181-2/15	W	6,440	WF	shore	-
MX-181-2/16	SW	6,435	Shad	playa	MS
MX-181-2/17	SW	9,250	Shad	playa	-
MX-181-2/18	W	6,034	WF	AP	-
MX-181-2/19	SW	7,240	WF	AP	-
MX-181-2/20	W	8,850	WF	AP	-
MX-181-2/21	W	9,655	Shad	AP	-
MX-181-2/22	W	8,530	LR	fan	-
MX-181-2/22A	NW	8,850	LR	fan	IF
MX-181-2/23**	SW	6,920	WF	fan	-
MX-181-2/23A	SW	6,436	SH	fan	IF IF
Cluster 3					
MX-181-3/1	E	5,631	BS	fan	LS
MX-181-3/1A	E	4,990	BS	fan	LS/Q
MX-181-3/2	E	6,436	BS	fan	LS
MX-181-3/3	E	6,436	BS	fan	LS
MX-181-3/4	E	7,840	LR	fan	LS
MX-181-3/5	E	3,218	BS	fan	Locus LS/Q Locus LS/Q

* Distance to water given in meters.
** Overlapping unit.

SAMPLE UNITS AND ENVIRONMENTAL VARIABLES (Cont.)

SU No.	Aspect	Water*	Vegetation	Landform	Site Type
Cluster 3 (Cont.)					
MX-181-3/5A	N	7,720	BS	fan	-
MX-181-3/6	E	5,470	BS	fan	Locus LS/Q
MX-181-3/7	E	5,632	BS	fan	Locus LS/Q
MX-181-3/8	E	4,020	BS	fan	Locus LS/Q
MX-181-3/9	E	2,250	BS	fan	Locus LS/Q
MX-181-3/10	E	3,050	BS	fan	
MX-181-3/11	E	5,631	LR	fan	LS
MX-181-3/12	NE	5,631	SH	fan	IF IF
MX-181-3/13	E	3,620	BS	fan	-
MX-181-3/14	E	5,631	BS	fan	-
MX-181-3/14A**	SE	5,630	BS	fan	-
MX-181-3/15	E	7,240	WF	AP	IF
MX-181-3/16	E	6,436	LR	fan	LS
MX-181-3/17	E	8,440	LR	AP	-
MX-181-3/18	E	6,434	SH	AP	-
MX-181-3/19	E	9,150	WF	AP	IF
MX-181-3/20	E	8,320	4-SB	AP	IF
MX-181-3/21	E	9,150	WF	AP	-
MX-181-3/22	E	8,045	WF	AP	-
MX-181-3/23	E	8,850	WF	AP	-

* Distance to water given in meters.
** Overlapping unit.

SAMPLE UNITS AND ENVIRONMENTAL VARIABLES (Cont.)

SU No.	Aspect	Water*	Vegetation	Landform	Site Type
Cluster 4					
MX-181-4/1	W	8,850	WF	AP	-
MX-181-4/1A	W	9,654	Shad	AP	-
MX-181-4/2	W	10,780	GM	shore	IF TC
MX-181-4/2A	W	10,250	GM	shore/ playa	-
MX-181-4/3	W	11,425	SW	shore/	TC
MX-181-4/3A	W	11,263	GM	playa	-
MX-181-4/4	W	10,460	Shad	AP	-
MX-181-4/5	W	11,260	LR	AP	-
MX-181-4/5A	W	10,050	Shad	AP	-
MX-181-4/6	NW	11,263	Shad	shore/ playa	TC
MX-181-4/7	SW	12,870	Grass	shore	-
MX-181-4/8	S	13,680	Shad	shore	-
MX-181-4/9	W	12,890	4-SB	AP	LS
MX-181-4/10	S	11,260	Shad	AP	-
MX-181-4/11	SW	12,070	GM	AP	-
MX-181-4/12	W	11,260	WF	AP	-
MX-181-4/13	SW	12,390	Shad	AP	LS LS
MX-181-4/14	SW	10,940	LR	Dune/AP	CS
MX-181-4/15	W	10,460	WF	AP	-
MX-181-4/16	SW	11,263	LR	AP	-
MX-181-4/17	SW	9,654	Shad	Dune/AP	TC
MX-181-4/18	S	11,263	Shad	AP	-

* Distance to water given in meters.
** Overlapping unit.

SAMPLE UNITS AND ENVIRONMENTAL VARIABLES (Cont.)

SU No.	Aspect	Water*	Vegetation	Landform	Site Type
Cluster 4 (Cont.)					
MX-181-4/19	S	9,654	Shad	AP	-
MX-181-4/20	SW	8,200	WF	AP	-
MX-181-4/21	S	10,458	4-SB	AP	-
MX-181-4/22	S	9,250	LR	AP	-
MX-181-4/22A**	S	8,850	LR	AP	-
MX-181-4/23	S	9,654	SW	AP	-
Cluster 5					
MX-181-5/1	S	9,300	LR	dune	-
MX-181-5/2	S	8,200	Shad	AP	-
MX-181-5/3	S	6,500	Shad	AP	-
MX-181-5/4	SW	5,300	Grass	dune	-
MX-181-5/5	SW	6,900	WF	AP	-
MX-181-5/5A**	SW	7,240	WF	AP	-
MX-181-5/6	W	7,240	WF	AP	-
MX-181-5/7	NW	3,060	HB	fan	-
MX-181-5/8	NW	6,200	SW	fan	IF
MX-181-5/9	W	5,950	LR	fan	-
MX-181-5/9A**	W	5,950	LR	fan	-
MX-181-5/10	W	5,955	HB	fan	-
MX-181-5/11	SW	5,150	BS	fan	-
MX-181-5/12	W	6,275	Grass	fan	-
MX-181-5/12A**	W	6,270	Grass	fan	-

* Distance to water given in meters.
** Overlapping unit.

SAMPLE UNITS AND ENVIRONMENTAL VARIABLES (Cont.)

SU No.	Aspect	Water*	Vegetation	Landform	Site Type
Cluster 5 (Cont.)					
MX-181-5/13	W	7,720	Grass	fan	-
MX-181-5/14	W	8,530	Grass	fan	-
MX-181-5/15	W	7,723	MT	fan	-
MX-181-5/16	W	10,300	Grass	fan	-
MX-181-5/17	W	9,330	BS	fan	-
MX-181-5/18	SW	10,460	SW	fan	-
MX-181-5/18A**	SW	10,450	SW	fan	-
MX-181-5/19	W	8,850	Grass	fan	HC
MX-181-5/19A**	W	8,850	Grass	fan	IF
MX-181-5/20	W	8,850	BS	fan	-
MX-181-5/20A**	W	8,850	BS	fan	-
MX-181-5/21	SW	6,110	SS	fan	IF
MX-181-5/22	W	4,830	SS	fan	-
MX-181-5/22A**	W	4,830	SS	fan	-
MX-181-5/23	W	4,023	BS	fan	-
Cluster 6					
MX-181-6/1	E	2,400	BS	fan	LS/Q
MX-181-6/1A**	E	2,450	BS	fan	(cont.)
MX-181-6/1B	E	2,350	BS	fan	(cont.)
MX-181-6/1C	E	2,494	BS	fan	(cont.)
MX-181-6/2	E	3,220	HB	fan	LS
MX-181-6/2A	E	4,420	HB	fan	(cont.)

* Distance to water given in meters.
** Overlapping unit.

SAMPLE UNITS AND ENVIRONMENTAL VARIABLES (Cont.)

SU No.	Aspect	Water*	Vegetation	Landform	Site Type
<u>Cluster 6</u> (Cont.)					
MX-181-6/3	E	5,630	LR	fan	IF
MX-181-6/4	E	6,436	SH	fan	IF -
MX-181-6/5	E	6,436	SH	fan	-
MX-181-6/6	E	7,241	SH	fan	LS
MX-181-6/7	SE	4,827	MT	fan	-
MX-181-6/8	E	7,240	LR	fan	-
MX-181-6/9	SE	7,400	MT	fan	IF
MX-181-6/10	E	6,436	HB	fan	LS
MX-181-6/11	SE	4,670	SW	fan	IF
MX-181-6/12	E	5,600	HB	fan	-
MX-181-6/13	E	5,950	Shad	AP	-
MX-181-6/14	S	6,245	MT	fan	LS
MX-181-6/14A**	S	4,880	MT	fan	IF
MX-181-6/15	SE	5,950	MT	fan	LS
MX-181-6/16	E	5,630	SH	fan	LS
MX-181-6/17	E	4,505	BS	fan	LS
MX-181-6/18	E	5,800	MT	fan	LS
MX-181-6/18A**	E	4,990	MT	fan	(cont)
MX-181-6/18A	E	4,990	MT	fan	LS/Q
MX-181-6/19	SE	3,218	BS	fan	LS/Q
MX-181-6/20	E	4,670	LR	dune	-
MX-181-6/21	E	6,100	Shad	AP	IF

* Distance to water given in meters.
** Overlapping unit.

SAMPLE UNITS AND ENVIRONMENTAL VARIABLES (Cont.)

SU No.	Aspect	Water*	Vegetation	Landform	Site Type
Cluster 6 (Cont.)					
MX-181-6/22	S	7,240	Shad	AP	-
MX-181-6/23	E	6,436	SH	fan	-
Cluster 7					
MX-181-7/1	SE	9,600	LR	dune/ shore	LS
MX-181-7/2	SE	10,620	LR	dune/ shore	TC
MX-181-7/3	SE	8,850	LR	fan	IF
MX-181-7/4	E	7,240	WF	fan	-
MX-181-7/5	S	8,850	Shad	AP	-
MX-181-7/6	SE	8,850	SW	AP	-
MX-181-7/7	S	7,723	Shad	AP	-
MX-181-7/8	SE	8,366	LR	AP	IF
MX-181-7/9	S	9,170	LR	AP	-
MX-181-7/10	S	9,170	HB	AP	-
MX-181-7/11	S	10,000	LR	AP	-
MX-181-7/12	SE	8,045	Shad	AP	-
MX-181-7/13	SE	10,000	LR	AP	-
MX-181-7/14	SE	10,460	Shad	dune/AP	IF
MX-181-7/15	S	10,780	LR	AP	-
MX-181-7/16	S	10,450	WF	AP	-
MX-181-7/17	S	8,366	SH	AP	-
MX-181-7/18	SE	9,170	SH	AP	-
MX-181-7/19	S	8,530	LR	AP	-

* Distance to water given in meters.
** Overlapping unit.

SAMPLE UNITS AND ENVIRONMENTAL VARIABLES (Cont.)

SU No.	Aspect	Water*	Vegetation	Landform	Site Type
Cluster 7 (Cont.)					
MX-181-7/20	S	6,760	LR	AP	-
MX-181-7/21	S	6,420	Shad	AP	-
MX-181-7/22	S	8,045	LR	AP	IF
MX-181-7/23	E	7,023	Shad	AP	-
Cluster 8					
MX-181-8/1	S	8,045	SW	dune	TC
MX-181-8/2	SW	6,436	Shad	AP	-
MX-181-8/3	S	5,630	LR	AP	-
MX-181-8/4	NW	4,830	WF	AP	MS
MX-181-8/5	S	5,790	WF	AP	-
MX-181-8/6	SW	3,218	4-SB	fan	-
MX-181-8/7	S	7,240	Shad	AP	TC
MX-181-8/8	SW	4,827	Grass	fan	-
MX-181-8/9	S	7,240	BS	AP	-
MX-181-8/10	W	4,827	Grass	fan	-
MX-181-8/11	W	6,436	LR	AP	IF
MX-181-8/12	W	4,830	BS	fan	IF IF IF
MX-181-8/13	W	8,045	LR	AP	-
MX-181-8/14	W	6,600	BS	fan	IF
MX-181-8/15	SW	9,870	WF	AP	-
MX-181-8/16	W	4,220	BS	fan	-

* Distance to water given in meters.
** Overlapping unit.

SAMPLE UNITS AND ENVIRONMENTAL VARIABLES (Cont.)

SU No.	Aspect	Water*	Vegetation	Landform	Site Type
Cluster 8 (Cont.)					
MX-181-8/17	W	4,420	BS	fan	-
MX-181-8/18	W	2,414	BS	fan	-
MX-181-8/18A	W	2,414	BS	fan	-
MX-181-8/19	W	2,410	BS	fan	-
MX-181-8/19A	SW	2,330	BS	fan	-
MX-181-8/20	W	2,900	BS	fan	-
MX-181-8/21	W	5,470	BS	fan	-
MX-181-8/21A	W	5,470	BS	fan	-
MX-181-8/22	NW	4,020	BS	fan	-
MX-181-8/22A	NW	4,020	BS	fan	-
MX-181-8/23	W	4,020	BS	fan	-
Cluster 9					
MX-181-9/1	W	6,436	BS	fan	-
MX-181-9/2	W	8,045	SW	AP	-
MX-181-9/3	S	8,850	WF	AP	-
MX-181-9/4	S	8,690	WF	AP	LS
MX-181-9/5	S	9,650	WF	AP	IF LS
MX-181-9/6	SW	11,263	LR	fan	IF
MX-181-9/7	SW	12,872	BS	fan	-
MX-181-9/8	SW	12,068	BS	fan	-
MX-181-9/9	S	11,256	WF	AP	-
MX-181-9/10	S	12,060	Grass	AP	-

* Distance to water given in meters.
** Overlapping unit.

SAMPLE UNITS AND ENVIRONMENTAL VARIABLES (Cont.)

SU No.	Aspect	Water*	Vegetation	Landform	Site Type
Cluster 9 (Cont.)					
MX-181-9/11	S	11,256	BS	fan	-
MX-181-9/12	S	9,648	SH	fan	-
MX-181-9/13	SW	9,648	BS	fan	-
MX-181-9/14	SE	8,040	BS	fan	IF
MX-181-9/15	SW	6,432	BS	fan	-
MX-181-9/16	SW	9,654	BS	fan	LS
MX-181-9/17	SW	9,330	BS	fan	-
MX-181-9/18	S	11,263	BS	fan	-
MX-181-9/19	S	9,654	BS	fan	LS
MX-181-9/20	W	9,654	BS	fan	-
MX-181-9/21	SW	11,000	BS	fan	-
MX-181-9/22	S	9,645	LR	fan	-
MX-181-9/23	SW	7,240	SW	fan	-
MX-181-9/23A**	SW	7,400	SW	fan	-
Cluster 10					
MX-181-10/1	S	8,689	4-SB	AP	-
MX-181-10/2	S	7,240	SH	AP	IF
MX-181-10/3	S	6,436	MT	AP	-
MX-181-10/4	SE	4,666	WF	AP	-
MX-181-10/5	E	1,931	BS	fan	-
MX-181-10/6	E	1,931	BS	fan	-
MX-181-10/7	NE	4,022	WF	fan	-

* Distance to water given in meters.
** Overlapping unit.

SAMPLE UNITS AND ENVIRONMENTAL VARIABLES (Cont.)

SU No.	Aspect	Water*	Vegetation	Landform	Site Type
Cluster 10 (Cont.)					
MX-181-10/8	SE	6,758	MT	AP	TC
MX-181-10/9	SE	2,896	BS	fan	IF
MX-181-10/10	S	6,436	Grass	AP	-
MX-181-10/11	S	6,035	LR	AP	-
MX-181-10/12	S	7,562	BS	AP	IF
MX-181-10/12A**	S	7,562	BS	AP	(cont.)
MX-181-10/13	S	8,045	Grass	AP	-
MX-181-10/14	NE	6,436	WF	fan	-
MX-181-10/15	E	6,436	WF	fan	-
MX-181-10/16	E	8,850	WF	fan	-
MX-181-10/16A	E	8,850	WF	fan	-
MX-181-10/17	SE	10,290	WF	fan	-
MX-181-10/18	SE	7,240	SH	fan	-
MX-181-10/19	SE	4,900	BS	fan	IF
MX-181-10/20	E	4,825	WF	fan	-
MX-181-10/21	E	2,750	SS	fan	-
MX-181-10/22	SE	3,600	SS	fan	-
MX-181-10/23	SW	1,770	BS	fan	-
CMF					
MX-181-CMF/1	E	9,654	WF	AP	-
MX-181-CMF/2	N	6,440	Bud	AP	-

* Distance to water given in meters.
** Overlapping unit.

SAMPLE UNITS AND ENVIRONMENTAL VARIABLES (Cont.)

SU No.	Aspect	Water*	Vegetation	Landform	Site Type
CMF (Cont.)					
MX-181-CMF/3	E	5,630	LR	fan	-
MX-181-CMF/4	SW	12,067	GM	AP	-
MX-181-CMF/5	W	7,240	Grass	fan	-
MX-181-CMF/6	SE	7,255	SH	fan	IF
MX-181-CMF/7	S	6,900	MT	AP	LS LS
MX-181-CMF/8	W	8,045	WF	fan	-
MX-181-CMF/8A	W	6,436	WF	fan	IF
MX-181-CMF/9	S	12,872	LR	fan	IF
MX-181-CMF/10	SE	4,830	LR	fan	-

* Distance to water given in meters.
** Overlapping unit.

APPENDIX F

APPENDIX F

ISOLATED ARTIFACTS AND ENVIRONMENTAL VARIABLES

SU No.	Aspect	Water*	Vegetation	Landform
MX-181-1/1-P1	SE	10,000	LR	fan
MX-181-1/13-P1	E	7,241	WF	AP
MX-181-1/15-P1	E	10,458	LR	AP
MX-181-1/15-P2	E	10,458	WF	AP
MX-181-1/16-P1	E	10,450	WF	AP
MX-181-1/16-P2	E	10,450	LR	AP
MX-181-1/20-P1	E	6,034	LR	AP
MX-181-1/20-P2	E	6,034	LR	AP
MX-181-2/2-P1	NW	5,632	LR	fan
MX-181-2/13-P1	NW	6,436	WF	AP
MX-181-2/22A(off)-P1	NW	8,850	LR	fan
MX-181-2/23A-P1	SW	6,346	SH	fan
MX-181-2/23A-P2	SW	6,346	SH	fan
MX-181-3/12-P1	NE	5,631	LR	fan
MX-181-3/12-P2	NE	5,631	LR	fan
MX-181-3/15-P1	E	7,241	WF	AP
MX-181-3/19-P1	E	9,150	WF	AP
MX-181-3/20-P1	E	8,320	HB	AP
MX-181-4/2-P1	W	10,780	GM	shoreline
MX-181-5/8-P1	NW	6,200	HB	fan
MX-181-5/19A-P1	W	8,850	Grass	fan
MX-181-5/21-P1	SW	6,110	LS	fan

* Distance to water given in meters.

ISOLATED ARTIFACTS AND ENVIRONMENTAL VARIABLES

SU No.	Aspect	Water*	Vegetation	Landform
MX-181-6/3-P1	E	5,630	HB	fan
MX-181-6/3-P2	E	5,630	HB	fan
MX-181-6/9-P1	SE	7,240	LR	fan
MX-181-6/11-P1	SE	4,670	BS	fan
MX-181-6/14A-P1	S	4,830	MT	fan
MX-181-6/21-P1	E	6,115	Shad	AP
MX-181-7/3-P1	SE	8,850	LR	fan
MX-181-7/8-P1	SE	8,366	LR	AP
MX-181-7/14-P1	SE	10,460	WF	dune
MX-181-7/22(off)-P1	S	8,045	LR	AP
MX-181-8/11-P1	W	6,436	LR	AP
MX-181-8/12-P1	W	4,827	BS	fan
MX-181-8/12(off)-P1	W	4,827	BS	fan
MX-181-8/12(off)-P2	W	4,827	BS	fan
MX-181-8/14-P1	W	6,600	LR	fan
MX-181-9/5-P1	SW	9,650	WF	AP
MX-181-9/6-P1	SW	11,263	BS	fan
MX-181-9/14-P1	SE	8,040	BS	fan
MX-181-10/2(off)-P1	S	7,240	LR	AP
MX-181-10/9-P1	SE	2,896	BS	fan
MX-181-10/12-P1	E	7,562	BS	AP
MX-181-10/19-P1	SE	4,900	BS	fan
MX-181-CMF/6-P1	SE	7,250	HB	fan

* Distance to water given in meters.

ISOLATED ARTIFACTS AND ENVIRONMENTAL VARIABLES

SU No.	Aspect	Water*	Vegetation	Landform
MX-181-CMF/6-P2	SE	7,250	HB	fan
MX-181-CMF/8A-P1	W	6,436	LR	fan
MX-181-CMF/9-P1	S	12,872	BS	fan
MX-181-CMF/9-P2	S	12,872	BS	fan
MX-181-DTN-JG4	E	8,045	Shad	shoreline
MX-181-DTN-JG5	E	8,045	Shad	shoreline
MX-181-DTN-JG6	NE	8,850	WF	shoreline
MX-181-DTN-EB4	SE	8,045	LR	AP
MX-181-DTN-EB5	S	8,850	LR	AP
MX-181-DTN-EB7	E	8,045	WF	shoreline
MX-181-DTN-EB8	E	8,045	LR	shoreline
MX-181-DTN-EB10	N	10,460	LR	AP
MX-181-DTN-EB12	NE	9,975	WF	shoreline
MX-181-DTN-AM1	S	9,654	LR	fan
MX-181-DTN-AM2	S	10,459	WF	AP
MX-181-DTN-AM3	E	8,850	Shad	AP
MX-181-DTN-AM5	E	10,458	Shad	AP
MX-181-DTN-AM6	E	10,458	Shad	AP
MX-181-DTN-AM9	E	10,458	LR	AP
MX-181-DTN-AM10	E	10,458	WF	AP
MX-181-DTN-AM11	E	10,460	WF	AP
MX-181-DTN-AM13	E	9,672	WF	AP
MX-181-DTN-AM14	E	9,672	WF	AP
MX-181-DTN-AM15	E	9,672	WF	AP

* Distance to water given in meters.

ISOLATED ARTIFACTS AND ENVIRONMENTAL VARIABLES

SU No.	Aspect	Water*	Vegetation	Landform
MX-181-C2/Road-P1	SW	5,631	LR	fan
MX-181-C2/Road-P2	SW	8,045	Shad	playa
MX-181-C2/Road-P4	SW	9,010	Shad	playa
MX-181-C2/Road-P5	SW	7,240	LR	fan
MX-181-C2/Road-P6	SW	7,240	LR	fan

* Distance to water given in meters.

APPENDIX G

APPENDIX G

LITHIC SCATTERS AND ENVIRONMENTAL VARIABLES

SU No.	Aspect	Water*	Vegetation	Landform
Large Lithic Scatters (30)				
MX-181-1/9-P1	E	8,045	LR	fan
MX-181-1/18-P1	E	7,240	LR	AP
MX-181-1/19-P1	E	6,640	HB	fan
MX-181-1/23-P1	E	7,650	LR	AP
MX-181-3/1-P1	SE	6,436	BS	fan
MX-181-3/2-P1	NE	6,436	BS	fan
MX-181-3/3-P1	E	6,436	BS	fan
MX-181-3/4-P1	E	7,240	LR	fan
MX-181-3/11-P1	E	5,631	LR	fan
MX-181-3/16-P1	E	6,436	LR	fan
MX-181-4/13-P1	S	12,390	Shad	AP
MX-181-6/2-P1	E	3,220	BS	fan
MX-181-6/6-P1	E	7,240	SH	fan
MX-181-6/10-P1	E	6,436	HB	fan
MX-181-6/14-P1	SE	6,275	HB	fan
MX-181-6/15-P1	SE	5,950	HB	fan
MX-181-6/16-P1	E	5,630	HB	fan
MX-181-6/17-P1	E	4,505	BS	fan
MX-181-6/18-P1	E	5,800	MT	fan
MX-181-7/1-P1	E	9,600	WF	shoreline/ dune
MX-181-9/4-P1	S	8,690	WF	AP

* Distance to water given in meters.

LITHIC SCATTERS AND ENVIRONMENTAL VARIABLES

SU No.	Aspect	Water*	Vegetation	Landform
Large Lithic Scatters (Cont.)				
MX-181-DTN-JG1	NE	8,205	Shad	shoreline
MX-181-DTN-JG2	NE	7,885	Bud	shoreline
MX-181-DTN-JG3	E	7,885	Shad	shoreline
MX-181-DTN-EB1	SE	7,240	MT	AP
MX-181-DTN-EB6	E	8,045	Shad	shoreline
MX-181-DTN-AM4	E	10,459	Shad	AP
MX-181-DTN-AM7	SE	10,458	LR	AP
MX-181-DTN-AM8	SE	10,460	WF	AP
MX-181-CMF/7-P2	S	6,900	LR	AP
Small Lithic Scatters (5)				
MX-181-4/9(off)-P1	W	12,872	WF	AP
MX-181-4/13-P2	S	12,390	Shad	AP
MX-181-9/16-P1	SW	9,654	BS	fan
MX-181-CMF/7-P1	S	6,900	LR	AP
MX-181-DTN-EB2	SW	9,650	LR	AP
Chipping Circle (3)				
MX-181-4/14-P1	SW	10,940	LR	dune
MX-181-9/5-P2	S	9,650	WF	AP
MX-181-9/19-P1	S	9,654	BS	fan

* Distance to water given in meters.

LITHIC SCATTERS AND ENVIRONMENTAL VARIABLES

SU No.	Aspect	Water*	Vegetation	Landform
Quarry (4)				
MX-181-1/22-P1**	E	2,250	BS	fan
MX-181-3/5-P1**	E	2,250	BS	fan
MX-181-3/6-P1**	E	2,250	BS	fan
MX-181-3/7-P1**	E	2,250	BS	fan
MX-181-3/8-P1**	E	2,250	BS	fan
MX-181-3/9-P1**	E	2,250	BS	fan
MX-181-3/1A-P1	E	4,990	BS	fan
MX-181-6/1-P1	E	2,400	BS	fan
MX-181-6/19-P1	E	3,018	BS	fan

* Distance to water given in meters.

** These are all loci of the large west side lithic scatter/ quarry site.

APPENDIX H

APPENDIX H

TEMPORARY CAMPS AND MILLING STATIONS AND ENVIRONMENTAL VARIABLES

SU No.	Aspect	Water(1)	Vegetation	Landform
Temporary Camps				
MX-181-C2/Road-P3	SW	8,045	Shad	Playa
MX-181-EB11	NE	+10,000	WF	Shoreline
MX-181-EB9	E	9,650	Shad/LR/ Bud/WF	Shoreline
MX-181-4/2-P2	W	+10,000	GM	Shoreline
MX-181-4/3-P1	W	+10,000	Shad	Playa/ Shoreline
MX-181-4/6-P1	NW	+10,000	Bud	Shoreline
MX-181-4/17-P1	SW	9,654	Shad	Dune
MX-181-7/2-P1	SE	+10,000	CDS	Dune?
MX-181-8/1-P1	S	8,045	LR	Dune
MX-181-8/7-P1	S	7,240	Shad	AP
MX-181-10/8-P1	SE	6,432	HB	AP
MX-181-1/8(off)-M1*	S	+10,000	Barren (LR)	Outcrop
Milling Stations				
MX-181-EB3	S	8,850	Shad	AP
MX-181-AM12	E	9,642	WF	AP
MX-181-2/16-P1	SW	6,435	Shad	Playa
MX-181-8/4- P1	NW	4,830	WF	AP

* Outside Sample Unit.
(1) Distance to water given in meters.

APPENDIX I

APPENDIX I

BUREAU OF LAND MANAGEMENT LETTER ON SIGNIFICANCE AND AVOIDANCE MITIGATION CRITERIA

E-TR-48-III-I

IN REPLY REFER TO

United States Department of the Interior

BUREAU OF LAND MANAGEMENT

Nevada State Office
300 Booth Street
P.O. Box 12000
Reno, Nevada 89520

September 12, 1980

Subject: Archaeological Site Significance---Nevada/Utah MX-IOC Areas

The following statements describe the types of sites that shall require avoidance recommendations based on the ground rules presented by Air Force representatives at the August 12, 1980 Reno meeting. Briefly, those rules state that this project is a "dry-run" test case to determine the feasibility of the systems design to avoid all sites requiring such action. Consequently, data recovery is to be limited only to small site diagnostics that may establish temporal occupation periods or cultural affiliation. Formulation of mitigation strategies and implementation of the Nevada small site collection policy is not appropriate at this time.

Prehistoric

1. Sites exhibiting a high likelihood of depth (e.g. dune sites, sites located on alluvial fans exhibiting high densities of chipped stone artifacts or hearth features).
2. Isolated features which demonstrate a possibility of depth (e.g. caches partially exposed by deflation)
3. Rockshelters immediately exposed to project location.
4. Rock art sites.
5. Large lithic scatters containing temporally diagnostic artifacts or artifacts indicative of specific cultural affiliations, multi-component sites, or sites composed of discrete multiple activity areas.
6. Burial sites
7. Rock alignments and cairns

Historic

1. Structures greater than 50 years of age (e.g. ranches, ore mills)
2. Multi-component or multiple activity sites (e.g. mining camps or towns)

3. Mining developments (e.g. shafts, addits)

4. Cemeteries

5. Road or trail traces of early transportation routes.

In addition to the above prehistoric and historic site type listings, unusual or enigmatic anomalies should also be included.

Richard Hanes
Nevada BLM State Archaeologist